Applying Enterprise Architecting to the Business Acquisition Process

by

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Submitted to the Engineering Systems Division, and the Sloan School of Management in partial fulfillment of the requirements for the degrees of

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Disclaimer: The opinions and conclusions contained herein are solely the author's and should not be attributed to any third parties.

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Abstract:

Background: Since the 1980s, the pace and dollar value of acquisitions in the US have grown at an astounding rate (Hitt, Sirower). The benefits from many of these acquisitions are elusive, with 60% of recent acquisitions showing negative return for the acquiring company (Hitt et. all, 5). Expected synergies are not realized despite the valiant efforts of the integration team who struggle with implementing the plans developed prior to deal close. Correlations can be drawn to the field of systems engineering, where specific processes and tools are employed to understand the interactions of various functional areas and avoid such implementation difficulties. Enterprise Architecting (EA) is one such framework that has shown promise in analyzing complex enterprises.

Results: The thesis shows that all currently analyzed aspects of a potential acquisition are evaluated if the EA framework is used. It also shows that enough information is available prior to closing to use the EA framework to understand the potential enterprise. Further, it shows that the EA framework is flexible enough to accommodate the unique aspects of an acquisition analysis. Finally, the thesis shows a definite qualitative benefit from applying the EA framework.

Conclusions: Despite the fact that one of the aspects of the hypothesis was not met, EA is still a valid and beneficial framework to apply to the acquisition process. It provides a sound process framework that should be used to design and implement robust acquisition analysis processes. This will enable greater process efficiency, quality, and consistency.

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I would like to give special thanks to the leadership of the organizations involved in the case study. Your employees provided me an open and honest assessment of each organization prior to the acquisition. The case study would have lacked depth and been non-conclusive without this deeper understanding of the inner workings of each company. Thanks are also owed to Jan Klein and Debbie Nightingale, my trusted academic advisors. Your guidance kept this project on track and allowed me to learn even more about myself than I learned about the acquisition process.

Finally, the author gratefully acknowledges the support and resources made available to him through the MIT Leaders for Manufacturing program, a partnership between MIT and major U.S. manufacturing companies.

Dedication:

For a married man with two young children, the decision to go back to school after almost ten years in the workplace is not made alone. I am blessed to have an incredibly understanding wife and fantastically supportive children. Without their constant support, this adventure would never have happened.

This thesis is dedicated to our children, Corbyn and Joe. As parents, we fully recognize that the costs of their father's time and attention required for a program like LFM is a sacrifice that the kids were in no real position to understand or appreciate when they granted their approval. It is our sincerest hope that this experience will show the benefits and value of hard work and dedication to achieve personal goals. We know you will both achieve great things in life.

And, of course, this thesis is dedicated to my wife, April. As hard as this two years has been academically, the challenges of maintaining a cohesive family through the relocations and complete change in your husband's lifestyle are much greater. You are an amazing woman.

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1 Introduction

Since the 1980s, the pace and dollar value of acquisitions in the US have grown at an astounding rate. The benefits from many of these acquisitions are elusive, with 60% of recent acquisitions showing negative return for the acquiring company (Hitt et. all, 5). Further complicating matters, this frenzied pace of acquisition has made evaluating the corporate fit of potential acquisition more difficult; both the company looking to make the acquisition and the target company may have recent acquisitions that have not been fully integrated. Even more challenging are the complications surrounding evaluation and integration of the increasing number of companies with global manufacturing operations and sales departments.

In light of this, stakeholders are hungering for stronger acquisition evaluation tools and techniques that will provide more confidence in the prospective benefits derived from a potential acquisition. Today, the process of evaluating a company or business for a potential acquisition is more of an art than a science. Furthermore, while "the numbers" for an acquisition have been the focus of most of the research on acquisition methodology to date, it is widely recognized that the softer side of the acquisition can have equal or more impact on the overall effectiveness of integrating the acquired company.

Similar challenges have been experienced by engineering firms tasked with understanding and developing solutions to ever more complex systems engineering problems (Nightingale, 1). Saddled with evaluation frameworks that force rigid definitions between the system's interfaces, new concepts were created that allowed for more holistic evaluations. These concepts have been further refined into the emerging field of Enterprise

Architecting (EA), which seeks to apply the same analytical rigor used in systems engineering applications to understand the complex inner and outer workings of enterprises: complex groups of organizations that work together toward a common goal. The concepts have shown tremendous promise in aerospace, transportation, and power generation applications. It is the author's supposition that similar frameworks that have been so successful at analyzing existing enterprises will provide significant benefit compared with current methods when applied to analyzing potential enterprises; enterprises that would exist if the acquisition is completed.

It is the goal of this thesis to verify the applicability of EA to the acquisition process. This will be done by verifying that all elements analyzed in the current acquisition process are covered by the EA framework, exploring any modifications to the framework that may be required as applied to acquisitions, and providing a case study of the application of EA to a recently completed acquisition to show its viability.

1.1 Thesis Overview

This thesis is divided into five main sections. The first section is devoted to outlining the thesis itself. The second section provides background on the acquisition process and the EA framework. The third section walks the reader through the EA framework by providing an overview of each specific analysis, information on how that analysis should be modified to apply to an acquisition evaluation, and an example of an analysis performed on a case study. Section four focuses on the lessons learned for the case study and the internship sponsoring organization. Section five covers the applicability of EA to the acquisition process itself and defines areas of future research.

1.1.1 Problem Statement

While the frequency, size, and complexity of acquisitions all continue to grow at an impressive rate, market confidence in the success of acquisitions remains dismally low (Sirower, Pablo and Javidan, Hitt). Research shows that market response upon the announcement of an acquisition warrants a positive response only 35% of the time, and that the average magnitude of stock prices' negative reaction to acquisitions is growing each decade (Sirower, 146). Many theories have been produced to explain the growing difference in enthusiasm between management and shareholders for acquisitions, ranging from management's hubris to management pursuing personal objectives such as empire building (Sirower, 11).

The problem lies in executives' expectations of synergies that historically have not materialized, history shareholders apparently remember all too well. Firms need to increase the accuracy of their synergy calculations and better account for the non-monetary elements of the acquisition that are required to capture hoped for synergies. Increased accuracy of synergy identification will increase shareholders faith in management's acquisition decision making skills and reduce the expectation gap between these two key stakeholder groups.

1.1.2 Hypothesis

The hypothesis for this thesis is that EA is applicable to the acquisition process. Four conditions will be examined to test EAs applicability.

1. Verify that all elements analyzed in the current acquisition process are covered by the EA framework

2. Explore any modifications to the framework that may be required as applied to acquisitions
3. Provide a case study of the application of EA to a recently completed acquisition
4. Demonstrate an added benefit from applying the EA framework, as compared to current methods

1.1.3 Methodology of Research

This project was completed in the Business Development organization at a large, diversified corporation, hereafter referred to as the Parent Company. The research and case study analysis were performed at the Parent Company facility between October 2006 and February 2007.

First, the author reviewed relevant literature and interviewed the Parent Company's Business Development employees to determine the current state process used to evaluate and plan for the integration of acquisitions. The current process was mapped with specific attention paid to the types and depth of information available at different times in the current acquisition process.

Second, the Parent Company identified a recently completed acquisition where pre-acquisition information about the acquired companies was available. This information, along with information provided by the affected portions of the Parent Company and personal interviews, was used to perform an EA analysis. This analysis was used to identify any benefits of applying EA to the acquisition/integration process and to ensure all portions of the current acquisition process were represented within the EA framework.

Finally, the case study and process of evaluating an acquisition using EA were used to evaluate the effectiveness of applying EA to the acquisition process.

In order to ensure that the author's analysis does not disclose any proprietary information of the organizations involved, it was decided to mask all identifying information about the Parent Company and all divisions therein. Identifying information for the acquired company is also disguised. Thus, the case study analyzes the Alpha Division of Parent Company and it's purchase of Beta Company. Other divisions of the Parent Company are called Kappa Division and Delta Division. Brand names are disguised as Tough Pump, Power Pump, and Europump. All related mission statements and company histories have also been modified by the author to convey the original intent while disguising the originating companies.

1.1.4 Conclusions

The first three conditions for proving the hypothesis for this thesis were met. All elements currently associated with the acquisition process are included in one of the analyses required as part of the EA framework. Suggested modifications to the EA framework consisted only of minor changes in emphasis across different elements. Finally, the EA framework was successfully applied to the case study and provided areas of potential benefit.

The fourth condition was, in the author's opinion, only partially met. Numerically quantifiable results would have highlighted the increased effectiveness of applying EA to acquisition studies. The case study did not identify quantifiable benefits. The case study did identify changes in the organizational structure and the value creation process that would yield benefits to the acquiring and target organizations. It also identified benefits in the acquisition process relating to increased opportunities within the acquiring and target organizations for documentation, communication, collaboration, and integration. It is the

author's opinion that EA definitely shows a positive benefit where applied to the acquisition process, regardless of the lack of quantifiable improved results.

2 Project Description

2.1 Acquisition Process Overview

For firms that grow through acquisition, the proprietary acquisition process they follow is often considered a competitive advantage. An entire industry of consulting, legal, and banking firms has developed to assist firms in developing strong acquisition skills. While different firms may approach acquisition and integration evaluation slightly differently, all follow a relatively generic process flow, which is detailed below:

- *Target Acquisition:* A potential acquisition can be identified in a multitude of ways, ranging from an announcement of the intent to sell to the culmination of a long courting process, during which an acquiring organization may work for years to entice the target to sell. A target will usually exhibit some quantifiable synergy in order to be considered fully.
- *Target Profile Creation:* More information on the target is generated by combing publicly available sources of information (annual reports, industry assessments, periodicals, target company data packages, etc.). Known synergies as well as target bid prices should be identified and developed.
- *Due Diligence:* Detailed information on the target company is gathered by a small team of specialists to verify previously gathered information and confirm/expand expected synergies and identification of risks. Target bid prices should be refined.
- *Negotiation:* Given the expected synergies and risks, negotiations between the two firms to reach a mutually agreeable outcome are conducted.

- *Integration:* The target company should be integrated into the acquiring company per the plan developed throughout the rest of the process.

2.2 Motivation- Why is this a systems problem?

Many managements apparently were overexposed in impressionable childhood years to the story in which the imprisoned handsome prince is released from a toad's body by a kiss from a beautiful princess. Consequently, they are certain their managerial kiss will do wonders for the profitability of Company T(arget).

Such optimism is essential. Absent that rosy view, why else should the shareholders of Company A(cquisitor) want to own an interest in T at the 2X takeover cost rather than at the X market price they would pay if they made direct purchases on their own?

In other words, investors can always buy toads at the going price for toads. If investors instead bankroll princesses who wish to pay double for the right to kiss the toad, those kisses had better pack some real dynamite. We've observed many kisses but very few miracles. Nevertheless, many managerial princesses remain serenely confident about the future potency of their kisses - even after their corporate backyards are knee-deep in unresponsive toads.

- Warren Buffett, 1981 Berkshire Hathaway Annual Report

This obsession with kissing many toads, hoping to find a prince, is a driving force behind US business and continues to strengthen despite numerous studies that suggest

these kisses destroy, not create, value for the acquiring organization. The magnitude of merger activity is impressive; the last decade of the twentieth century brought about $12 trillion in global acquisition activity (Picot, 4). The number of acquisitions that show a positive return on investment is conversely unimpressive; *Business Week* reports that recent acquisitions destroyed value for the acquiring company 61% of the time (Henry, 60).

Parallels can be drawn to engineering systems where system performance has similarly trailed expectation. Engineering systems have become increasingly complex as firms drive to push technological limits, create more integrated products, and employ globalization strategies. Boundaries between different engineering specialties are often considered inflexible to simplify analyses. Expectations for system-level performance are often overestimated due to a lack of understanding on how individual systems will integrate with one another. Engineered systems have addressed these challenges by implementing Systems Engineering, a discipline devoted to managing the interfaces between disparate functional areas. The fundamentals of systems engineering have also been applied to designing and analyzing complex organizations as part of EA.

The most basic definition of synergy implies that the whole is greater than the sum of the parts. Within any one aspect of a company, management and employees alike will try to maximize the efficiency of their own organization. It is unlikely that new management will uncover vast untapped value that the previous organization did not find on the micro level. Instead, it is the combination of the acquiring and target company that typically represents the opportunity to create additional value. In short, it is at the system level where the greatest benefits of an acquisition should be found.

Yet the acquisition process analyzes the target company primarily at the micro level. Individual subject matter experts are called to participate on due diligence teams to understand and evaluate their areas of expertise in the target company. Each is armed with a series of questions that are designed to fully understand their particular area and minimize risk for the acquiring organization. Due diligence is frequently very concentrated with little time devoted to allow subject matter expert to share the unique aspects of his or her analysis. One individual, typically someone with experience in acquisitions leading the due diligence team, may be the only person tasked with identifying and developing system-level solutions. The degree to which system-level solutions are identified and evaluated is very dependant on the skills of this due diligence team leader. It is the author's supposition that many of the opportunities and risks associated with a potential acquisition may be hidden across these functional boundaries and that a more holistic analysis of the potential acquisition would provide a much more accurate estimate of the potential synergies.

2.2.1 Increasing complexity of an organization that grows through acquisition

The challenges faced when evaluating an acquisition grow increasingly complex when there are previous acquisitions that must be taken into account. Acquisitions that have been purchased but not fully integrated affect acquiring firms in multiple ways:

- Resources required to evaluate and integrate acquisitions may be stretched thin
- Unfinished acquisitions add an additional level of uncertainty when evaluating potential new acquisition synergies, since the acquiring organization is in a more pronounced state of flux than usual

- Opportunities to identify lessons learned in the previous acquisition might be lost when resources and personnel are shifted to integrating the latest acquisition
- Risks that were considered minor in probability or consequence for previous acquisition might compound leaving the entire organization more vulnerable.

2.3 Enterprise Architecting Background

EA is a holistic, systems-level approach to analyzing, understanding, and improving the interaction and design of complex groups of stakeholders. At its core, EA is a framework that allows individuals or teams to distill these complex relationships into smaller, more manageable analyses without losing the opportunity for system-level benefits. EA has been successfully applied to a number of complex existing enterprises ranging, from academic programs to defense contracting organizations. However, it has not yet been applied to an acquisition process where the goal is to analyze two distinct organizations that are combining into one.

It is helpful to break the term Enterprise Architecting apart to understand each of its' components separately. Enterprise is best defined as "complex, highly integrated systems comprised of processes, organizations, information and supporting technologies" (Nightingale and Rhodes, 2004). The concept of examining companies as enterprises is not new and has been studied extensively by management and social scientists. Architecture, as applied to complex systems, can best be defined as "the fundamental organization of a system embodied in its components, their relationships to each other and to the environment and principles guiding its design and evolution" (IEEE P1471). Combining these two concepts together creates a powerful ideology that can assist enterprise leaders in the thoughtful design and execution of their mission.

2.3.1 The EA Process

An EA is created through a series of analyses. They are:

1. Enterprise Boundary Definition
2. Strategic Drivers and Objectives
3. Stakeholder Analysis
4. Current State Enterprise Architecture
5. Future Vision
6. Creation of Multiple Potential Future State EAs
7. Down-select Process for Future State EAs
8. Final Future State Architecture

Each is described in more detail in the following sections:

2.3.1.1 Enterprise Boundary Definition

Enterprises commonly involve complex organizations. It is beneficial to limit the scope of what portion of these organizations is analyzed to simplify the analysis and allow for more research depth into each area. However, limiting scope must be balanced against the need to analyze as much of the organization as possible, which can identify more system-level synergies. Clearly delineating what organizations and stakeholders are included in the analysis is an important step to ensure all participants are aligned.

2.3.1.2 Identification of Strategic Drivers and Objectives

Understanding what strategic drivers and objectives exist in the market space where the enterprise operates is crucial in determining how an enterprise should position itself. This portion of the EA should document the macro-level strategic considerations for the enterprise. It is crucial to understand the potential industry earnings, nature of

competition, availability of substitutes, power within the vertical supply chain, and barriers to entry. It is important to note that this portion does NOT plan a response to this macro-level strategic information.

2.3.1.3 Stakeholder Analysis

The stakeholder analysis documents all affected entities of the defined enterprise and the nature of their interactions. It can highlight underserved stakeholders who may disrupt planned changes if they have ability to do so. For acquisitions, the stakeholder maps visually present differences in stakeholder relationships between the two organizations that will need to be addressed.

2.3.1.4 Current State Architecture

EA is defined by seven distinct views: Policy / External Factors, Strategy, Process, Organization, Knowledge, Information Technology, and Products / Services. The different views are defined separately, yet influence each other to create a holistic understanding of the analyzed enterprise. For acquisitions, the views are developed separately for the target and acquiring organizations.

2.3.1.5 Future Vision

The future vision documents the intended strategy and mission of the combined enterprise. It is the guiding light that governs the intended output from the future state architecture. To this end, it also serves as the evaluation tool to discriminate between various different future state architectures based on difficulty of implementation and the degree to which they fulfill the future vision.

2.3.1.6 Creation of Multiple Future State EAs

Throughout the creation of the previous EA sections, it is inevitable that potential enterprise improvements will be identified. At this stage, these ideas should be documented and grouped into holistic enterprise solutions. It is important that these ideas are grouped based on their system synergies to create integrated solutions.

2.3.1.7 Down-select Process for Future State EAs

With the creation of multiple potential future states, a process to choose the optimum solution is required. Based on the end state defined by the Future Vision, different attributes can be defined and given numeric weighting based on their relative importance. The down-select process should also include risk assessment and ease of implementation as compared with the defined current state architecture. Numeric synergy calculations can also be completed at this stage. The end goal is to choose one, final future state to further refine.

2.3.1.8 Future State Architecture

Using the same seven views that document the current state architecture, the future state architecture captures the intended future state for the combined enterprise. This document serves to align the implementation team and fully defined the expected system synergies.

2.3.1.9 EA Framework

It is important to stress that enterprises can't be dissected and analyzed in parts. It is within the interaction of each of these pieces that system level synergies can be found. A framework for how these views fit with each other is included as Figure 1 (Nightingale and Rhodes, 14).

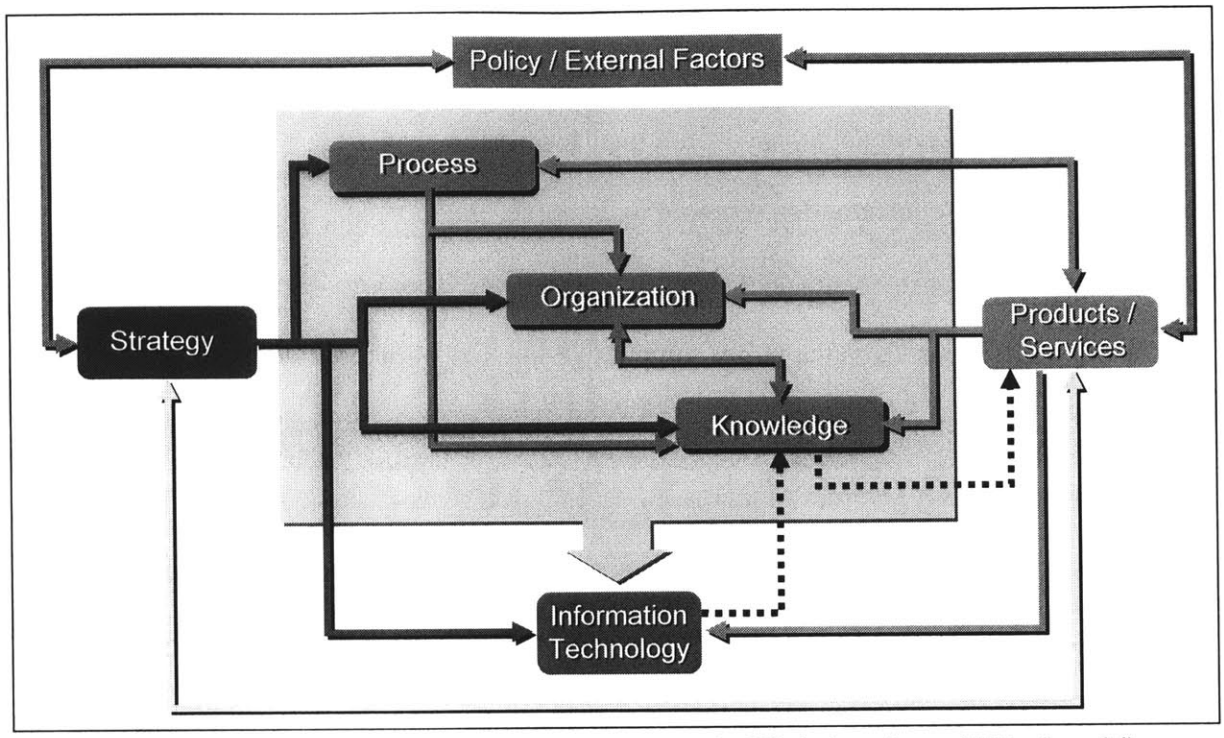

Figure 1: Enterprise Architecting Framework (Nightingale and Rhodes, 14)

2.3.2 Customization of EA

For many elements of EA, there are multiple analysis frameworks and techniques that can be used to document and describe the relevant information. This thesis captures the author's preferred methods, but they are not intended to dictate a preferred analysis framework. The value of EA lies primarily in that each portion is analyzed, documented, and integrated with all of the other sections. If a particular EA participant has a favorite method for analyzing and describing a particular EA element, that method should be used.

2.4 Acquisition Process Considerations

While EA has been used extensively to analyze existing enterprises, it has not been used to evaluate an enterprise that does not yet exist. Using EA to evaluate two separate corporate entities that are looking to become one requires a certain amount of special

consideration. Issues such as the timing of information availability from the target organization and the level to which reliable target information is available prior to the purchase can have an impact of the overall quality of the analysis.

Gathering the information required to complete an EA is challenging even in organizations that are interested and eager to work toward a common future vision. Accessing information from the target company is an order of magnitude harder for several reasons. First, the target company has an incentive to provide only positive information to the acquiring company in order to increase negotiation leverage. If too much of the analysis is completed based on this overly rosy information, the future state architecture will fail to address many of the areas of opportunities within the target firms. Secondly, the target firm understandably limits the amount of information they share with potential acquiring firms based on the stage of the acquisition process, particularly if it points to increased risks.

Consideration for when data would be available to complete the EA led to the creation of Table 1. This figure highlights when various sections of the EA can be reliably created based on the information available. Given the restriction of data from the target organization, it is expected that several sections will need to be revisited after deal closing in order to reduce the risk inherent from false information. These elements are denoted with a "II" to indicate review and revision as required.

	Acquisition Timeline				
	Target Profile	**Indication of Interest**	**Due Diligence**	**Purchase Decision**	**Integration**
EA Process Implementation	Organization View	Enterprise Boundary Definition	Process View	Future Vision	Organization View II
	Product / Services View	Stakeholder Analysis	Information Technology View	Future State EAs	Future State EA II
	Strategic Drivers and Objectives		Strategy View	Down-select to Final Future State	Strategy View II
	External / Policy View		Knowledge Management View		Knowledge Management View II

Table 1: EA Framework Creation Timeline

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3 Project Approach

3.1 Verification of EA's full inclusion of current process

EA could not be considered for replacement of existing acquisition evaluation processes if it did not capture all of the benefits currently identified. Major sources of potential synergies were mapped into the EA framework to ensure all current potential synergies would be captured using EA to evaluate an acquisition. The results are shown in Table 2. Note that potential areas of synergy were mapped into the section of EA where they would mostly likely be discovered. Most potential synergies have benefits and costs in multiple areas within EA.

EA View Framework	Potential Synergy
Policy / External Factors View	• Governmental policy changes
Strategy View	• Access to capital • Strategic vertical supply chain considerations
Process View	• Employee reduction due to redundant departments • Improved access to markets
Organization View	• Production facility rationalization • Economies of scale
Knowledge View	• Intellectual property
Information Technology View	• Improved technology use
Products / Services View	• Leveraging brand equity to new product lines

	• Bundling opportunities within product lines • Complementary products

Table 2: EA Inclusion of Current Process Synergy Identification

3.2 Choosing the case study

There were several key factors in selecting a case study. Given the sensitive nature of an active acquisition, it was decided to use a recently completed acquisition for a trial application of EA fundamentals to an acquisition. The chosen acquisition had several defining characteristics:

- Recent enough that stakeholders would remember what the two organizations were like just prior to the deal close
- Considered successful by most everyone involved in order to foster the open sharing of information
- Have limited company-sensitive information to make data collection and public sharing (i.e., a publishable thesis) easier

The chosen acquisition was the mid 2000 purchase of Beta Company by the Alpha Division Corporation; a business unit within the Industrials Division of the Parent Company.

3.3 Applying EA to the case study

Once the case study had been identified, information on the acquiring and target organizations was gathered by reviewing documentation created during the acquisition process, as well as conducting extensive personal interviews with personnel at Beta Company, Alpha Division, and the Business Development group at Parent Company. EA had previously been used only to analyze existing enterprises and had not been used to

analyze enterprises that were currently separate but that might be combined in the near future. Each component of the EA framework was carefully considered given this new application. There are three primary sections presented for each of the EA components:

- **Overview:** Each EA component and its importance are discussed in detail to provide the reader more background.
- **Acquisition Process Implications:** Specific considerations or slight modifications to the framework are analyzed and presented.
- **Alpha Division – Beta Company Case Study:** An example of the component as it would be applied to the case study is presented.

3.3.1 Enterprise boundary definition

3.3.1.1 Overview

Before an Enterprise can be carefully analyzed, it must be carefully defined. If the enterprise is defined too broadly, either the analysis will consume inordinate amounts of resources (both calendar time and man hours) or it will not have enough depth to fully identify all of the relevant issues and their potential solutions. Alternatively, if the system is defined too narrowly, system-level benefits that extend beyond the set boundaries will not be identified and developed. There is a direct trade off between the costs of analyzing a broad enterprise and the risk of missing opportunities associated with a narrower enterprise definition.

3.3.1.2 Acquisition Process Implications

Enterprise definition helps the acquisition process by narrowing the portion of the acquiring company that needs to be considered. For multi-faceted companies, the portion

of the firm that is pursuing the acquisition is most involved with the synergy analysis. They may be supported by a central business development group that makes sure synergy opportunities in other areas of the business are identified and developed. The process of formally documenting the enterprise boundaries should help define the analysis team and make sure that all potential stakeholders are identified and become involved early in the process.

3.3.1.3 Alpha Division – Beta Company Case Study

For the Beta Company Acquisition, enterprise definition was relatively straightforward. There were two specific portions of the enterprise that needed to be defined: how much of Beta Company and how much of Alpha's Parent Company to include in the enterprise analysis. After careful consideration, it was determined that only the Alpha Division portion of Parent Company and all of Beta Company would be included in the analysis. An explanation of this decision is detailed below.

3.3.1.4 Beta Company Boundaries

It would be unusual for an acquiring company not to include the entirety of the target company, or the specific division within a company that is available for sale, in its analysis. There may be a circumstance in which this is not the case; for instance when the target organization has a division that does not have a strategic fit with the rest of the business and is an obvious candidate for divestiture. For Beta Company specifically, there were no obvious immediate divestiture opportunities. Therefore, all of Beta Company was included.

3.3.1.5 Parent Company Boundaries

The decision about what portion of Parent Company to include in the analysis also proved to be relatively straightforward. Given the products Beta Company produced and the markets they served, it was obvious at the outset that the Beta Company acquisition would have little to no synergies with other division within Parent Company outside of Parent Company's Industrials division. Within Industrials, there are three completely autonomous divisions: Alpha, Kappa, and Delta. Each was evaluated separately for inclusion in the enterprise analysis.

Alpha Division: The author's synthesis of Alpha Division's website is included below:

> Since early in the 1900's, Alpha Division has used its scientific, engineering and production resources to develop and manufacture equipment that accurately controls fluids ranging from water to high viscosity polymers, damaging chemicals, caustic substances, and other challenging pumping media.

Alpha Division also makes safety valves, back pressure valves, calibration columns, pulsation dampeners, and streaming current detectors, as well as tanks and chemical feed systems. Alpha Division has three main geographically delineated business units: Alpha Division Asia, Alpha Division Europe, and Alpha Division USA.

Alpha Division was the business division requesting the purchase of Beta Company. While there were some Beta Company products that complemented or overlapped the existing Alpha Division product line, specifically Beta Company's Tough Pump line, the request to pursue the acquisition was not based on complementary product offerings (filling gaps in the Alpha Division product offerings). Instead, the expected synergies with Alpha Division existed in the distribution and sales channels, mainly the extensive development and use of strong, tier one distributor networks in the US. With

approximately 800 employees, Alpha Division was small enough to include in its entirety in the analyzed enterprise.

Kappa: Kappa Division offers reliable compressed air products for a variety of different applications and supports all its solutions with high-quality parts, services, and training. Kappa Division's primary products include industrial air compressors, dryers, filters, construction air compressors, air tools, and air end units (system level solutions). While Beta Company produced some amount of gas boosters and air pressure amplifiers, they were not of the air volume and continuous duty usage of typical Kappa Division offerings. Furthermore, there were few synergies in either the supply base or distribution and sales networks. Given this, it was decided Kappa Division would not be included in the analysis since there was little chance synergies would be found between Beta Company and Kappa Division.

Delta Division: The author's synthesis of Delta Division's website is included below:

> Delta Division designs, manufactures and supports industrial pumps and compressor products, primarily for the process fluid and gas industries. Delta Division's primary markets are worldwide hydrocarbon and chemical processing, pulp and paper, power generation, and the food and beverage markets. Aftermarket services include spare parts, overhaul and repair as well as engineering and technical support.

Delta Division and Alpha Division have an intermixed history and at one point were combined into one division. After three years of operating as one business unit, customer confusion surrounding product offerings and global distribution concerns became more costly than the savings provided by the synergies associated with combined operations, management, and distribution. The two companies were separated in the 1990s.

While a few of Beta Company's products had some overlap with Delta Division's offerings, the applications (flow rates, price points) were significantly different. Given the vastly better fit with Alpha Division and the limited potential for system-level synergies, Delta Division was also excluded from the scope of this enterprise analysis.

3.3.2 Strategic Drivers and Objectives

3.3.2.1 Overview

In order to create and maintain a competitive advantage, a firm must have an idea of what macro-level strategic drivers are affecting the industry the firm serves. Understanding an industry's potential industry earnings, industry barriers to entry, power distribution in the vertical supply chain, and the nature of competition are all key factors to evaluating an industry's attractiveness. Defining these variables is required before the impact of a potential acquisition can be evaluated.

3.3.2.2 Acquisition Process Implications

For the acquisition process, strategic drivers and objectives should be identified separately for the acquiring and the target company, provided they serve different industries. The different organizations may have common strategic drivers and similar objectives, making it easier for different stakeholders to understand what will drive the enterprise after integration. Alternatively, the organizations might have strategic drivers that are counterbalancing, providing risk mitigation for both institutions. Understanding these drivers prior to acquisition will help the organization determine how they will change after the acquisition is finalized; a key factor in determining how the new enterprise will perform.

3.3.2.3 Beta Company

Potential Industry Earnings: In the US and Europe, Beta Company sold into mature markets with deeply established personal relationships between independent distributors and end customers. Given that Beta Company's products were a very small portion of a much larger system, customers were generally willing to pay more for a higher perceived quality product. The potential market for Beta Company's products was expected to grow along with the markets that it served; there were no expected new applications of its products and no increased consumption expected from current markets. There were few, if any, product substitutes for Beta Company products in these markets. Given this potential revenue curve, the market was experiencing more pressure on cost in order to maximize potential earnings.

In other international markets, Beta Company was experiencing much faster growth serving the same types of industries as the US. Relationships within these markets were not as established given the high number of new entrants and the less mature nature of the industry. Beta Company was able to sell directly to these consumers, which helped it establish the same high-quality reputation the company enjoyed in the US and Europe. Given the increased revenue growth potential, cost pressures were not as high in international markets.

Threat of Entry: In the US and European markets, established relationships acted as a significant barrier to entry. With less established international markets, new entrants were more of an issue. To help establish these relationships quickly, Beta Company would partner with existing independent distributors early and help them build their local markets. As the distributors grew to sufficient size, Beta Company would purchase the

distributors in order to own the customer relationships. Increased competition in international markets drove minimal price competition.

Rivalry: There was not intense competition between Beta Company and its competitors, as evidenced by little price competition and the generally slow rate of product development. There were few major players competing based on perceived quality. As mentioned earlier, the markets were willing to pay a premium for higher quality products and services.

Vertical Market Power: The components going into Beta Company's products were generally commodities, which provided very little market power to the suppliers. In the US and Europe, independent distributors held considerable market power given their close relationships with the customers. This was tempered somewhat by the close relationships these distributors also had with Beta Company; no distributor had ever dropped Beta Company's product line. Although switching costs were relatively low, customers in general accepted the distributor's suggestions given the low relative value of the product.

3.3.2.4 Alpha Division

Potential Industry Earnings: Alpha Division experienced nearly identical industry earnings considerations as Beta Company. The US and Europe had mature markets with deeply established personal relationships between distributors and end customers. Customers were generally willing to pay more for a higher perceived quality product, given the relative cost of Alpha Division's products. The potential market was expected to grow along with the industries where the products were used; there were no expected new applications of its products and no increased consumption expected from current markets. There were few, if any, product substitutes. Given this potential revenue curve, the market was experiencing more pressure on cost in order to maximize potential revenue.

International markets were growing much faster. Most international markets had immature relationships and had many new entrants. Alpha Division used more direct sales in these markets, which helped them establish the same high-quality reputation they enjoyed in the US and Europe.

Threat of Entry: Similar to potential industry earnings, Alpha Division mirrored Beta Company when looking at the threat of entry into the industry Alpha Division served. In the US and European markets, established relationships acted as a significant barrier to entry. With less established international markets and a less established brand name for quality, there were few barriers to entry. Increased competition in international markets drove some amount of price competition. It is important to note that there were some customers that were common across many of Alpha Division's global markets.

Rivalry: Similar to Beta Company, there was not intense competition between Alpha Division and its competitors, as evidenced by little price competition, a limited number of companies serving these markets, and the generally slow rate of product development. As mentioned earlier, the markets were willing to pay a premium for higher quality products and services.

Vertical Market Power: The components going into Alpha Division's products were generally commodities, which provided very little market power to the suppliers. In the US and Europe, independent distributors held considerable market power given their close relationships with the customers. Although switching costs were relatively low, customers in general accepted the distributor's suggestions given the low relative value of the product.

3.3.2.5 Alpha Division – Beta Company Analysis

A few key observations not noted in the proceeding section merit further clarification.

- Alpha Division's and Beta Company's strategic drivers and position within their markets were very similar.
- There did not appear to be any offsetting cyclical demand pattern advantages with the merger.
- The acquisition would allow Alpha Division to serve other facets of markets where they already had a presence and would almost double the company's distribution and sales networks in the United States.
- Alpha Division had a stronger international presence and would be able to facilitate the growth of Beta Company products in international markets better than other competing bidders.

3.3.3 Stakeholder Analysis

3.3.3.1 Overview

The most concise definition for a stakeholder as applied to EA comes from Ignacio Grossi; a "stakeholder is any group or individual who directly or indirectly affects or is affected by the level of achievement of an enterprise's value creation process" (Grossi, 29). Understanding who will be affected by a change at the Enterprise level is crucial to both determining the optimal EA to accomplish the change and uncovering stakeholder resistance that might thwart change efforts. Furthermore, the stakeholder maps can be used to evaluate cultural fit; the more differences between stakeholder relationships for the two organizations, the more difficult the change will be if one organization needs to conform to the other.

3.3.3.2 Acquisition Process Implications

Although the rest of the current state enterprise analysis methodology is completed independently for the acquiring and target organization, stakeholder maps are better drawn with the two organizations shown together. This simplifies the identification of common stakeholders. These maps will be used both to help determine the magnitude of cultural change within each organization and to identify any stakeholders who may be stretched too thin during the integration process.

3.3.3.3 Stakeholder Map

A physical depiction of the enterprise stakeholders and how they are connected to each other is an important communication tool among decision makers within the enterprise. By physically delineating the stakeholder relationships, a number of key discoveries can be easily identified and discussed. Particularly for the acquisition process, the following questions should be directly addressed:

- What stakeholders do the two organizations have in common? Is there a common worker union? Are the product lines used by the same end users? Do the two companies share the same competitors? If there are currently few shared stakeholders, are there any relationship synergies available?
- Are the stakeholder structures radically different between the two companies? Are there more stakeholders in one organization versus another? Are there any key stakeholders missing in one company? Could one organization adopt the other's stakeholder structure or will this cause cultural conflict?
- Are there stakeholders that seem to act as intermediaries between other stakeholders who might become choke points? Do all stakeholders communicate

through one particular group? Can this bottleneck resource accommodate the acquisition?

A stakeholder map for Alpha Division and Beta Company is included as Figure 2. Arrows indicate interactions between different stakeholders. The four larger circles indicate company boundaries. It is important to note that several stakeholders straddle both sides of the circle, indicating some portion of the relationship is outside of the company boundaries. Arrows pointing to the edge of the company boundaries indicate interactions with all stakeholders within the circle, including those that sit partially outside of the company boundary.

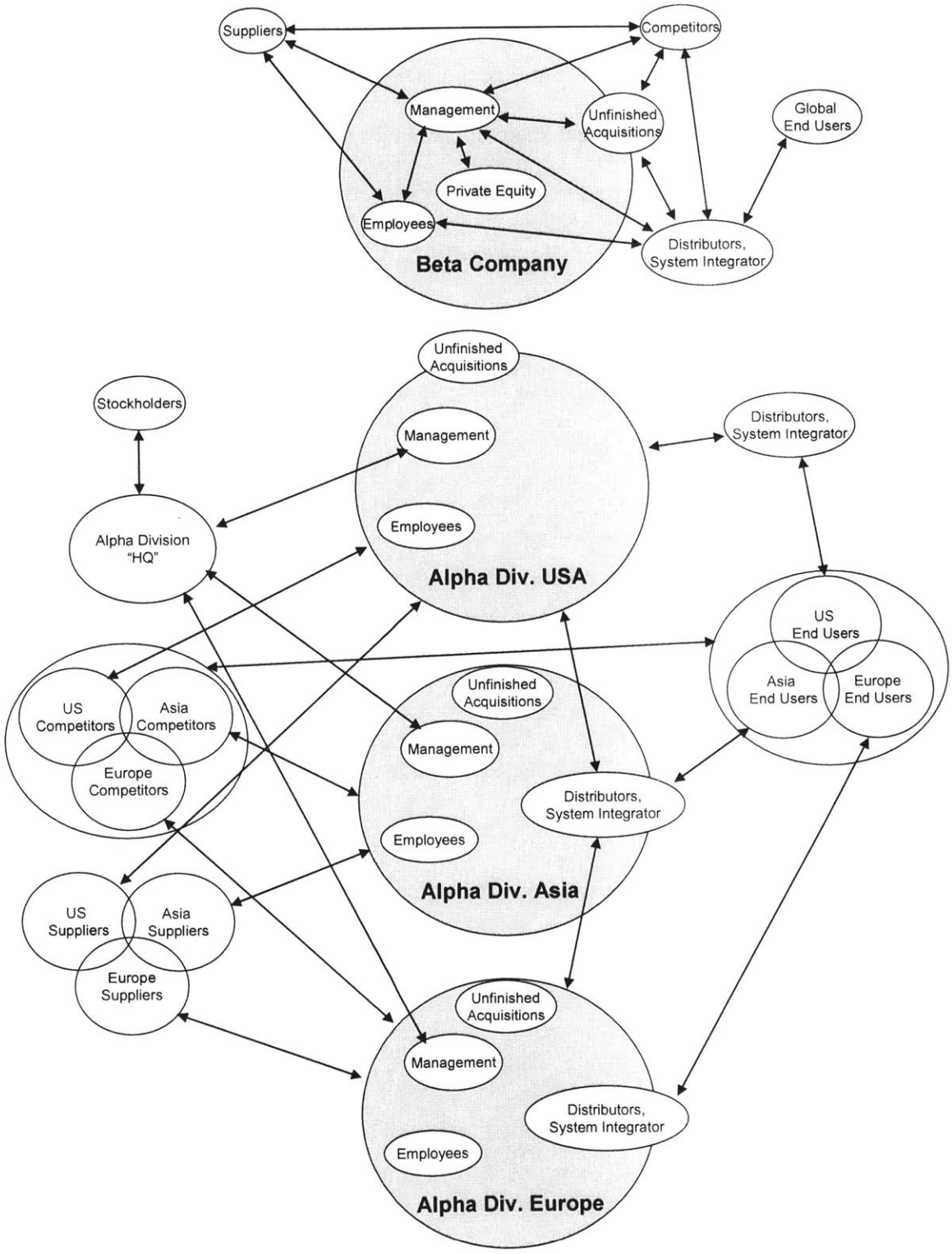

Figure 2: Stakeholder Map- Alpha Division and Beta Company

3.3.3.4 Alpha Division – Beta Company Analysis

The Stakeholder Map given as Figure 2 points to a number of key observations that would require further consideration during and after the acquisition.

1. There were acquisitions in both Beta Company and Alpha Division that had not been fully integrated. These unfinished acquisitions add another level of complexity to the acquisition analysis given the unsettled nature of the organizations involved. Depending on the type of integration strategy, it might mean that the culture of the acquiring or target organization is in flux. It also means that management and integration resources might be strained given the volume of integrations in work. Alternatively, this also might allow a new acquisition to learn from the on-going integration of previous companies (integration timing, lessons learned, integration mentorship).
2. Within Alpha Division, there were three separate geographic divisions that reported to the upper-level Alpha Division Company, which consisted of a President, Engineering and Supply Chain manager, Finance Controller, and a handful of other central administration managers. Other than reporting to this central entity, each region was responsible for covering its own markets in its own manner with very little guidance / interference from the Parent Company. Beta Company covered all markets from a central headquarters. Restructuring Beta Company to have similar stakeholder relationships would require significant structural changes.
3. It was evident that the Alpha Division divisions and Beta Company shared very few if any stakeholders. This would indicate limited opportunities for relationship-based synergies (brand recognition or increased market power relative to suppliers).

4. While the Alpha Division geographic divisions shared many of the same suppliers, competitors, and end users, they were independent entities with separate relationships with each stakeholder. This structure should be highly effective at servicing the different geographic markets. If these markets started to move toward common end users (i.e. the three end-user circles started to overlap more), it might be more effective to have a more active central organizing entity within the Alpha Division.

3.3.4 Current State Enterprise Architecture

3.3.4.1 Overview

There are seven different "views" through which an organization should be analyzed as part of applying EA fundamentals. These views should be developed separately and then evaluated together per the framework shown in Figure 1 (Nightingale, 14).

- Policy/External Factors: Government regulation, changes in customer demographics and needs, and movements by competitors can change the environment in which an enterprise operates. Understanding these external factors in their current state and their possible future states is crucial to understanding how effectively an enterprise will perform.
- Strategy: Strategy is core for any business and is a critical component in any acquisition decision. Understanding the current strategic business issues and priorities for both the acquiring and target firms is required before determining how the strategy will change after acquisition.

- Process: Process is the manner in which the organization creates value. It encompasses all aspects of the organization and the ways different functional areas interact in order to provide a product or service to the customer. Understanding how well each stakeholder groups is functioning in the overall organization helps to identify organizational synergies; for example, strong procurement skills in one organization could be used to offset weaker skills in the other.
- Organization: Functional groups should be organized in the most efficient manner to support the process of creating value for the customer. Organization is best viewed through three lenses: Strategic Design, Political, and Cultural. The acquisition process should evaluate the different organizational structures to evaluate overall cultural fit.
- Knowledge: The knowledge view can be most closely approximated to the field of knowledge management: defined as the processes and, to a lesser extent, the tools an organization uses to capture knowledge. The maturity of knowledge management within an organization is a critical factor in determining how information can be shared both within the current company and once the acquisition has been made. It is important to note that the knowledge view includes the knowledge required for employees to perform their work, the knowledge capability within each employee, and the knowledge sharing that happens within the organization.
- Information Technology: Information technology enables the process, organization, and knowledge views of the enterprise. This would include computing and voice infrastructures, as well as any collaboration tools used.
- Products/Services: Understanding how the products and services the enterprise creates fit into the competitive environment is key to understanding how the enterprise will perform.

3.3.4.2 Acquisition Process Implications

Having a defined, documented analysis of the underlying architecture of the organization is a critical component in determining what changes should be made in each organization and the benefits associated with each change. Documentation also serves to "level set" both the acquisition team and the integration team and allow for open debate in areas where individuals might not agree. Finally, the Current State EA is critical in determining which of the proposed future states will be easiest to implement and have the lowest risk of unintended consequences.

3.3.4.3 Policy/External Factors View

Background: An enterprise both influences and is influenced by the environment in which it operates. Understanding how this external environment will change in the foreseeable future is a key to determining how the combined enterprise will perform. This projected performance should dictate the purchase price of the target.

Beta Company: There was very little government policy in the US that uniquely affected Beta Company. Beta Company was affected by import and export policy in the other markets it served, similar to any other company that markets and sells its product globally. There were no plans to open production facilities in other countries. There were no significant changes in the competitive landscape that were expected to affect Beta Company's strategy.

Alpha Division: Similar to Beta Company, Alpha Division had no major government policy interactions that were significantly influencing its strategy. Alpha Division had a much stronger international presence, including manufacturing operations, which created multiple sources of government influence. There were cultural implications in Europe that

influenced where a product was produced versus where it was sold. Alpha Division, as part of Parent Company, had significant governmental lobbying power at its disposal. There were no significant changes expected in the competitive landscape that would affect Alpha Division's strategy.

3.3.4.4 Strategy View

Background: After analyzing the external strategic drivers in section 3.3.2, it is important to understand the internal strategies of the acquiring and target organizations. The strategic direction of an enterprise is the roadmap that aligns the enterprise to move toward its goals and defines how it will compete in the external marketplace. Understanding the degree of alignment between the current strategies of the two firms provides an indication of how radically one or both directions may change if the acquisition is completed. It is difficult to acheive alignment around an established strategy even when all other business factors are steady. If the strategic direction changes, workers may loose confidence in senior management if they perceive these leaders are changing direction too often thereby creating unnecessary and often painful change (i.e. corporate restructuring or lay-offs). The magnitude of strategic change in an organization should be accounted for when considering future enterprise performance.

The author has chosen to analyze each organization's internal strategy using the following framework as developed by the Sloan School of Management at the Massachusetts Institute of Technology: Strategic Objective, Strategic Scope, Competitive Advantage, Internal Consistency, and External Consistency.

Beta Company:

Strategic Objective: Beta Company sought to fully serve its existing markets in the US and Europe and build its customer base in other developing markets. It had no intention of organically expanding into other products and services of its existing customer base.

Strategic Scope: Beta Company's customers were primarily larger industrial firms that were willing to pay a price premium for a high perceived quality product. The company's primary markets were in the US and Europe, but it was actively expanding into global markets. Beta Company was growing through acquisition into new product areas that met the above requirements.

Competitive Advantage: Beta Company was able to maintain a perceived quality competitive advantage given the length of its relationships with customers (seven out of 10 of Beta Company's top revenue clients had been a customer of Beta Company for over 20 years). Further, Beta Company maintained a contractually bound independent distributor network in the US and Europe that had similar relationship capital with its customers. There were no exclusive territories granted to any of the distributors.

Internal Consistency: Beta Company had maintained a very stable product line (little product innovation) and provided a comprehensive line of spare parts. Along with aggressive quality targets for manufacturing, Beta Company was able to maintain a strong brand for consistent quality. Beta Company also maintained a group of engineers dedicated to solving customer's integration problems, further embedding this brand perception. These factors would appear to fit well with the strategic goals.

External Consistency:

In the US and Europe, Beta Company employed an extensive independent distributor network in order to better reach its intended customer segment. Along with these

distributors, Beta Company also provided direct engineering application support to ensure Beta Company products were used in the correct manner. Distributors were also required to keep three months of demand in inventory at any given time to ensure they could immediately meet customer needs. These factors would appear to fit well with the strategic goals.

Alpha Division:

Strategic Objective: Alpha Division was primarily interested in maintaining its current top position in its primary markets (US and Europe) while building its presence in other developing markets. Alpha Division did not tend to grow organically into adjacent market spaces but had plans to grow through acquisition into other profitable, niche markets in the surrounding areas in which the company had been successful.

Strategic Scope: Alpha Division competed based on high perceived quality. Its typical customers were larger industrial firms where the relative size of the purchase compared with the larger system would warrant paying a premium for reliable products. Most customers were based in the US and Europe but the company was actively expanding into international markets. Alpha Division had created a separate business unit to develop markets in Asia and had partnered with Delta Division in Shanghai. This partnership performed system integration work with potential growth into manufacturing.

Competitive Advantage: Alpha Division maintained a perceived quality competitive advantage through its extensive industry experience and history as a pioneer in the chemical dosing pump technologies. Alpha Division also had a strong tier 1 independent distributor network in the US and Europe that maintained a close relationship with Alpha Division's main customers.

Internal Consistency: Alpha Division had very little product innovation and recognized that a product "refresh" might be in order although there were no new technologies expected to change the existing customer needs. It provided a comprehensive line of spare parts for its existing installed products. Given the strategic objective to compete on quality, Alpha Division employed a strong quality assurance program. To support customers system level needs, customer engineering was a strong internal group that was dedicated to resolving customer's integration problems. These factors would appear to fit well with the strategic goals.

External Consistency:

In the US, Alpha Division exclusively used independent distributors who were well known for their customer contacts and years of customer satisfaction. Alpha Division also provided strong, direct engineering application support to ensure customers were given the right products to meet their needs.. Product availability was ensured by inacting inventory requirements for distributors. In non-US markets, Alpha Division used fewer independent distributors but was actively moving toward the distributor model used in US markets in order to increase its market penetration. These factors would appear to fit well with the strategic goals.

3.3.4.5 Process View

Background: The process most organizations follow to create a product or service is fairly similar. There are potential structural deviations that merit further review:

- The sales networks can be vastly different. Companies may sell directly to the public or use retail outlets. They may be part of a Co-op, which would introduce other

challenges and stakeholders. They may be part of other associations, which would impart additional requirements on the analyzed company.

- Procurement and the supply base can have many different variations. For some companies, the supply base may only provide indirect materials. For others, the supply base may represent the majority of the value in the final goods- for instance, system integration organizations.

Understanding all of the process differences between the acquiring and target companies helps determine the future state of the enterprise, as well as the transition steps needed to achieve the desired end goal.

Also of paramount importance in analyzing a company's process is developing and understanding the process effectiveness of each functional area. In an acquisition, this will highlight particular areas where knowledge capture and transfer are most important, both in terms of filling deficiencies and applying scarce resources at points that provide the most process improvement leverage.

Beta Company: The process Beta Company used is depicted in Figure 3. The ovals represent different functional groups within the organization. Arrows indicate the direction of information flow.

There are a few other interesting observations about the Beta Company process map. The different types of distribution networks are unique and could indicate complex and challenging relationships which might cause issues if the Sales department is not staffed correctly to handle this complexity. The relatively low number of company-owned distributors also warrants consideration. Independent distributors are not as likely to share market information with Beta Company as a wholly owned entity.

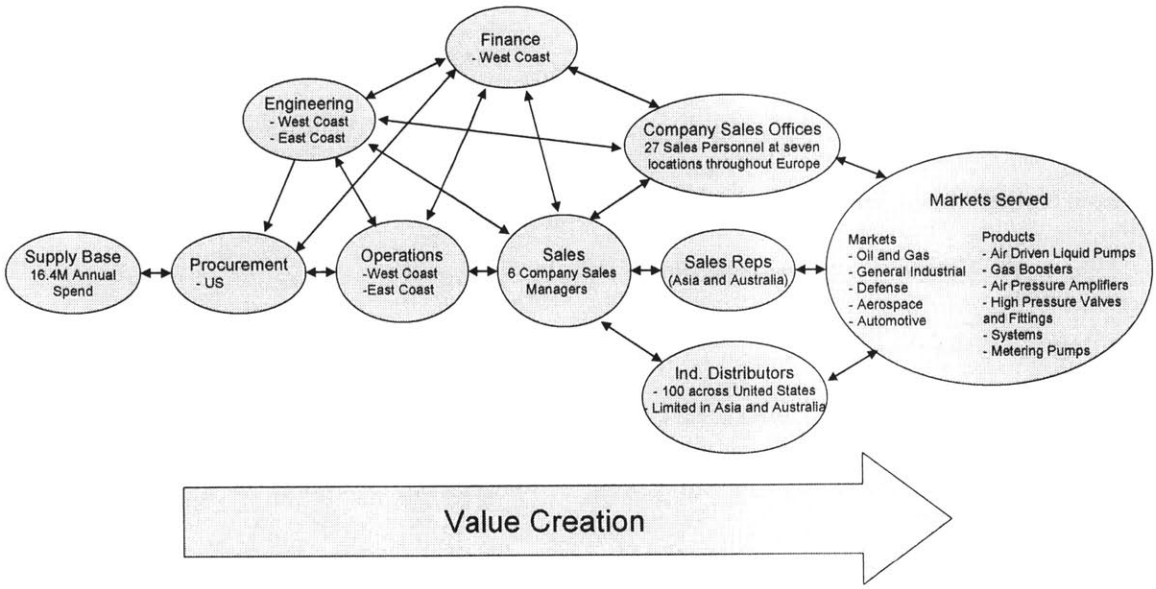

Figure 3: Beta Company Process Map

Based on multiple personal interviews, the author's subjective rating of the performance of each of these functional areas relative to the others is included in Table 3. For this table, a score of 1 is the lowest ranking and a score of 5 is the highest.

From Table 3, it appears that engineering was a weak point in the organization, consistently rated below par for most of the different internal organizations they served. Beta Company had been aggressively recruiting engineers since the purchase several years earlier by a private equity group when many experienced engineers left the company. The company had limited success given the cost of living in southern California and the broad skill set required to work at a company the size of Beta Company.

From (1)	To (2)	Value Given (1 to 2)	Delivery Efficiency	Value Taken (1 from 2)	Delivery Efficiency
Operations	Sales	Quality Products, on time delivery, special order responsiveness, manufacturing feasability of new products	4	Demand for products	3
Operations	Procurement	Schedule for product build, support for supplier rejection issues, steady demand	3	Detail parts per schedule, quality detail parts	2
Operations	Engineering	Design for manufacturability experience	3	Shop floor support to resolve engineering and manufacturability issues, drawing support, testing	2
Operations	Finance	Weekly direct and indirect part usage information, data on shop floor labor hours expended	3	Consolidated reports (weekly) to track spend, provides capital resources	3
Operations	Markets	Provides a quality product that meets the consumers needs. Delivers on time	4	NA	NA
Sales	Procurement	forecasts of part usage for planning purposes	3	Information on supply chain improvements/risk	3
Sales	Markets	Information on upcoming products and services, information on performance parameters of current services	3	Information on projected sales, market for goods and services	3
Sales	Engineering	Market information on what products will sell, new products that need to be developed	4	Engineering feasability for new designs, cost information, and manufacturability assessment, engineering support (product and systems) for sales	2
Sales	Finance	Sales forecast information, budgets for sales force	3	Cost information for specific sales (required for certain dollar values), weekly spend information	3
Sales	Company Sales Offices	Forecast information, sales quota levels, product information, sales support	4	Detailed regional sales forecasts, sales leads, consumer behavior information, inventory holding	4
Sales	Sales Reps	Sales quota levels, sales support	3	Orders, inventory holding	3
Sales	Independent Distributors	Sales quota levels, sales support	3	Orders, inventory holding	3
Procurement	Finance	Cost reduction/increase information to support budgeting and cost accounting, inventory level information	3	Standard cost information, Forecast information to help with price negotiation and supply chain design	3
Procurement	Engineering	Quotes for new products, supplier selection assistance	3	Support for supplier rejection issues, evaluation of design changes to assist manufacturing	2
Procurement	Supply Base	Forecasts of part usage for planning purposes, orders	3	On time delivery of required parts, cost reductions	3
Finance	Company Distributors	Budget information	3	Budget information	3
Finance	Engineering	NA	NA	Estimated engineering hours for new products, budgets	2

Table 3: Functional Department Process Efficiency Matrix - Beta Company

Alpha Division: The process map for Alpha Division is included as Figure 4. As with the Beta Company process map, the ovals represent different functional groups within the organization and the arrows indicate the direction of information flow. The author chose to not link sales and procurement, given the limited interaction these two groups share due to the size of the company.

Alpha Division had different sales channels in different global markets (very similar to Beta Company). Also similar to Beta Company, the use of independent distributors limited the quantity and quality of customer information, since independent sales channels are not as likely to share market information with Alpha Division.

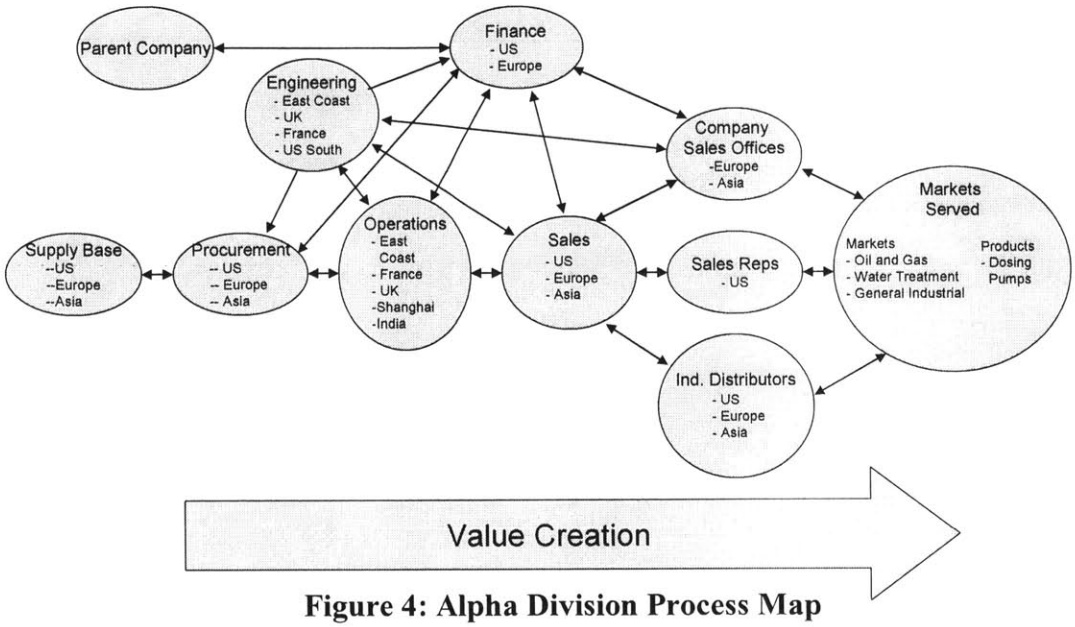

Figure 4: Alpha Division Process Map

Based on multiple personal interviews, the author's subjective rating of the performance of each of these functional areas relative to the others is included as Table 4. For this table, a score of 1 is the lowest ranking and a score of 5 is the highest.

From (1)	To (2)	Value Given (1 to 2)	Delivery Efficiency	Value Taken (1 from 2)	Delivery Efficiency
Operations	Sales	Quality products, on time delivery, special order responsiveness, manufacturing feasability of new products	4	Demand for products,	3
Operations	Procurement	Schedule for product build, support for supplier rejection issues, steady demand	3	Detail parts per schedule, quality detail parts	2
Operations	Engineering	Design for manufacturability experience	3	Shop floor support to resolve engineering and manufacturability issues, drawing support, testing	3
Operations	Finance	Weekly direct and indirect part usage information, data on shop floor labor hours expended	3	Consolidated reports (weekly) to track spend, provides capital resources	3
Operations	Markets	Provides a quality product that meets the consumers needs. Delivers on time	4	NA	NA
Sales	Markets	Information on upcoming products and services, Information on performance parameters of current services	3	Information on projected sales, market for goods and services	3
Sales	Engineering	Market information on what products will sell, new products that need to be developed	4	Engineering feasability for new designs, cost information, and manufacturability assessment, engineering support (product and systems) for sales	3
Sales	Finance	Sales forecast information, budgets for sales force	3	Cost information for specific sales (required for certain dollar values), weekly spend information	3
Sales	Company Sales Offices	Forecast information, sales quota levels, product information, sales support	4	Detailed regional sales forecasts, sales leads, consumer behavior information, inventory holding	4
Sales	Sales Reps	Sales quota levels, sales support	3	Orders, inventory holding	3
Sales	Independent Distributors	Sales quota levels, sales support	3	Orders, inventory holding	3
Procurement	Finance	Cost reduction/increase information to support budgeting and cost accounting, inventory level information	3	Standard cost information, forecast information to help with price negotiation and supply chain design	3
Procurement	Engineering	quotes for new products, supplier selection assistance	3	Support for supplier rejection issues, evaluation of design changes to assist manufacturing	3
Procurement	Supply Base	Forecasts of part usage for planning purposes, orders	3	On time delivery of required parts, cost reductions	3
Finance	Company Distributors	Budget information	3	Budget information	3
Finance	Engineering	NA	NA	Estimated engineering hours for new products, budgets	2
Finance	Parent Company	Rolled up monthly and quarterly numbers	3	Budget Allocations, corporate support for training	2

Table 4: Functional Department Process Efficiency Matrix – Alpha Division

The process efficiency matrix for Alpha Division does not highlight very many current process deficiencies that require immediate attention. It also does not identify any areas in which excess resources and talent exist that can be easily shared with other enterprise members.

3.3.4.6 Organization View

Background: The organization view should be fully developed by looking at the organization through three lenses: strategic design, political, and cultural. It is important to note that the strategic design lens has no correlation or relationship with the Strategic Drivers and Objectives in section 3.3.2 or the Strategy View in section 3.3.4.4.

Strategic Design: The strategic design lens looks at the organization like an engine; tasks are grouped into clusters with an associated organizational structure to provide sufficient economies of scale or scope. Along with this structure, boundaries are created between clusters, which require linking mechanisms to allow different groups to interact. Finally, alignment mechanisms need to be created to make sure all of the subgroups work in a coordinated manner. Strategic design can help uncover structure that no longer supports the needs and goals of the enterprise, particularly where the informal structure is no longer in sync with the formal, documented structure. An efficient enterprise structure greatly enhances an organization's effectiveness.

Beta Company: Beta Company was a relatively small company with 325 employees worldwide. The vast majority of these workers were in the US, with a larger percentage in the HQ facility in California and a smaller contingency at the Pennsylvania site. There were seven executive-level positions with corresponding supporting general managers and

directors below this leadership structure. Both US sites had inclusive operations, engineering, and finance support. This tall pyramid supported relatively robust process controls for a company of its size.

There were numerous alignment and linking considerations:

- Since each of the production sites maintained dedicated support personnel, linking and alignment across sites were not as critical.
- Alignment came at the top of the pyramid through the president and CEO instead of more linking mechanisms across functional boundaries.
- Sales had multiple sites and used more frequent teleconferences and face-to-face meetings to maintain alignment and share information.
- For the California facility, there were plenty of open meeting spaces, which facilitated informal conversations.
- The size of the organization simplified alignment and linking.

Alpha Division: Alpha Division had a fairly flat organizational structure that was structured based on global location and functional specialty. There were three main divisions: Asia and India, Europe, and USA. Each was run autonomously with little cross communication save for a few linking mechanisms which are detailed in the next paragraph..

The flat organizational structure for each geographic region facilitated easier alignment across organizational boundaries, although information between groups tended to be passed at fairly high organizational levels. Alpha Division identified specific production sites with sole product design authority for each product line to ensure common design and promote communication across global manufacturing sites as well as sales organizations. There was also some alignment that occurred on special process

improvement teams such as engineering design software implementation or central planning software implementation across finance and operations. Finally, there were cross-functional Value Stream Teams spanning geographically linked manufacturing facilities that helped alignment and linkage across functional boundaries to support particular product lines.

Initiatives at the Parent Company level also helped link different internal groups toward process improvement. Quality Assurance held weekly meetings to share best practices and create relationships across manufacturing sites. There were few liaison roles within the corporation, indicating communication between groups was fairly efficient.

Political: The political lens views the organization as a grouping of stakeholders, each with different needs and resources to contribute. The political view acknowledges that any interaction between stakeholders is not considered to be independent of both past and future transactions. Complementing the stakeholder analysis completed earlier, the political lens can be used to determine where stakeholder needs can be better met through different organizational mechanisms.

Beta Company: For Beta Company, the size of the organization precluded strong political divisions. However, there were a few indicators of political power within the organization:

- Finance had considerable power within the organization, as evidenced by relatively robust and complete financial accounting and reporting.
- The sales group had the most communication connections with other groups in the organization and was a gatekeeper for customer information. The group was not directly connected with the end user in the United States, which reduced the amount of customer feedback they received.

- Power Pumps was a separate business entity with its own internal political structure. The California facility had more political power, since it was the HQ and contained all but one of Beta Company's executives.
- Engineering appeared to be a weak player in the organization and had been for a few years. In general, groups are not inclined to share political power with groups who have none to offer in return. Because of this, engineering seemed to be stuck in a perpetual, downward spiral and was disproportionately blamed for the organization's weaknesses.
- Individual titles (Senior VP, VP, Director, etc.) may have been used to indicate status, since other political power symbols (large head counts, budgets, etc.) were not available for this size of organization.

Alpha Division: Within the US, European, and Asian operations, there were few political complications. Between the global businesses, there was some divide, particularly between Europe and the US. The president of Alpha Division and the Finance Controller both resided in France, which is the original production facility of EuroPump, purchased by Alpha Division in the 1980s. The US and European operations were run differently, which created a certain amount of positive competition. Evidence of this was seen in the light, friendly competition in which the two divisions engaged for sales to the Asia division, which didn't have its own manufacturing capabilities. Outside of this partially unhealthy competition, there was little cross communication between the two divisions except at the upper levels.

Cultural: The cultural lens evaluates the "cultural elements, the symbols, stories, and experiences from which meanings are derived, are shared among members of a culture and transmitted to new members" (Carroll, 4). Attention should be paid to the history of the

organization, the symbols and stories used to create a sense of belonging and identity, and unarticulated beliefs and norms that heavily influence the organization. Such cultural factors can have a more profound effect on the behavior of individuals than the strategic design and political lenses and can be perceived by outsiders as irrational. In an acquisition, the cultural aspects can arguably be the most important factor in determining how each employee will respond to the newly created enterprise.

Beta Company: Beta Company had a rich history marked with steady growth and various ownership structures. Other business units had been purchased by Beta Company and then divested, giving a sense of transience to any product line outside of Beta Company's core offerings. Changing company ownership had led to a feeling that the top players might change but day-to-day business would not be affected. Most employees felt these decisions were out of their hands and they would be minimally impacted. There was a general belief that achieving constant, solid results would keep these top- level management changes from affecting Beta Company's core operations. Finally, there was a Southern California (warm weather, sunshine, Hollywood) feel at the California facility. The culture at Beta Company was fairly fluid and appeared to be receptive to change, particularly if employees were involved in the decision and felt they had enough information to have an informed opinion.

Alpha Division: Both Alpha Division US and Alpha Division Europe had long traditions of innovation and entrepreneurship. Each was very proud of its heritage and the communities surrounding its manufacturing facilities. Both were more accustomed to acquiring than to being acquired. The existing culture seemed quite engrained and resistant to changes. Alpha Division Asia was a newer organization with less internal

cultural inertia, although it was subject to the cultural considerations of non-state-owned businesses within China.

3.3.4.7 Knowledge

Much of the value in an organization is contained in the knowledge of its workers. An organization may capture this knowledge through process discipline, extensive documentation, or tribal stories and rituals. Given the shelf life of information, how the target organization captures this knowledge and the ability of the acquiring company to access this knowledge are important.

Beta Company: Beta Company had fairly strong documentation of its operational processes, product definition, and financial history. Beta Company's growth required this documentation, given the number of new workers hired. Beta Company had felt the pain of improper knowledge management when it acquired the Power Pump line. Engineering drawings and manufacturing drawings had not been updated to reflect actual product definition and manufacturing processes, which made implementation of the line in California facility very difficult.

Alpha Division: Alpha Division also had fairly strong process documentation and discipline. Engineering definition was strong and financial controls were compliant with Sarbanes-Oxley. There was little sharing of information among the different global sites, with the exception of the QA group. Having grown through acquisition, Alpha Division was comfortable with the acquisition process and had some internal knowledge integration best practices.

3.3.4.8 Information Technology

Computing hardware and software are increasingly important components of a company's ability to produce a product or service, organize and communicate, and capture knowledge created. While differing computing systems are increasingly able to communicate with each other, consideration of how much IT is used at the target and acquiring companies is important in both facilitating the connections of the computing systems and understanding the cultural and cost implications of integration.

Beta Company: Beta Company's computing system was a fairly standard application of Microsoft Office tools and engineering definition software (both 2D and 3D). Finance, procurement, and operations all used J. D. Edwards (JDE) software as an MRP system. There was no central computing administration department to support these applications.

Alpha Division: Alpha Division also employed a standard application of Microsoft Office and Solidwerks and Autocad for engineering definition. An earlier version of JDE was used in operations and finance. Computing resources were heavily influenced by the Parent Company's central IT department which evaluated IT projects with an emphasis on economies of scale and scope. Computing assistance was also provided by the Parent Company.

3.3.4.9 Products/Services

The products and services view analyzes how the company's products and/or services fit within the competitive landscape. A thorough analysis of how competitors will react to the combined offerings of the target and acquiring companies is crucial to understanding how the new enterprise will perform.

Beta Company: As mentioned elsewhere, Beta Company was a top-branded product in the markets it served. It had a strong reputation for quality in a market that would pay a premium to avoid disrupting much more expensive machinery. Beta Company did not offer system-level design work in the United States but did in other parts of the world. Beta Company did not intend to change its product offerings.

Beta Company's main product offerings included air, gas, and liquid pumps, high-pressure valves and fittings, and metering pumps. Most of its products were designed for high-pressure applications (typically 4,000 to 20,000 psi with a capability of up to 100,000 psi) at low volumes of air, gas, or liquid flow. In addition to these main product offerings, Beta Company also provided a number of other products including injection rate-control devices, metal seals, and hydroswage systems. Beta Company also offered a full line of spare parts for the products it offered.

Alpha Division: Alpha Division was recognized as a market leader with a strong reputation for quality. It provided an extensive range of dosing pumps. Alpha Division also made safety valves, back pressure valves, calibration columns, pulsation dampeners, and streaming current detectors, as well as tanks and chemical feed systems. Alpha Division performed no system-level design work in the United States but did in Europe and Asia.

3.3.5 Future Vision

3.3.5.1 Overview

Before a path for acquisition integration is defined, a clear view of the organization's future vision is required to make sure that any changes the group makes

constitute progress toward the end goal. EA requires this defined future vision to ensure the future state architecture is designed to support an organization that performs in the specified manner.

3.3.5.2 Acquisition Process Implications

Acquisitions are typically pursued as part of the acquiring organization's future vision, most likely in terms of growth opportunities or strategic advantage. A perfectly aligned acquisition would move an organization toward this future vision without changing the desired end state in any way. There are probably few acquisitions that support the pre-acquisition future vision perfectly. Therefore, re-evaluating the acquiring organization's vision during and after an acquisition would seem to be prudent given the near certainty of stakeholder relationship changes.

When EA is applied to an existing enterprise, only one future vision needs to be created. For acquisitions, the future visions of both organizations prior to integration need to be documented. This can highlight large changes in the direction of both firms that might be challenging to implement. Ideally, the target organization has a very similar future vision to the acquiring organization, minimizing the cultural change required in the target after acquisition.

The future vision for the combined enterprise should also be defined prior to acquisition. This is the most important output from this analysis, as it acts as the guiding document for the creation of different potential future state EAs and as one of the evaluation criteria to determine which of these potential future states are optimal in terms of benefit and risk.

3.3.5.3 Alpha Division

At the time of the acquisition, Alpha Division operated as four different, geographically de-lineated, independent divisions with minimal interaction. It is important to note that the joint venture in Asia and the division that served India are often combined as Alpha Division Asia. Each division had different future visions and therefore each vision is included in this section

Since each division was autonomous, each had its own vision both in terms of how it interacted with various stakeholders and its overall strategic direction. In order to maintain this autonomy, there was no general, guiding vision for Alpha Division as a whole, which avoided creating a centralized, headquarters function. There were some areas where more cross-region collaboration was required, particularly with new product development and supply chain management. To this end, there was one global manager for these functions that helped provide alignment and share best practices.

Joint Venture with Delta Division in Asia: China is a market experiencing rapid growth. To support this market, the Asian joint venture with the Delta Division was created to provide opportunities to grow and serve this market. In order to safeguard the identity of the case study organizations, the author provides a synopsis of the guiding vision for this joint venture in Figure 5.

Execution: Culture Construction – Joint Venture Vocabulary	
Vision and Mission	Mind Set
• Return on Investment	• Business Ethic and Professionalism
• No.1 in Asia	• Quality and Sense of Responsibility
• Sustainable Growth	• Principled and Innovative
• Benefit Society	• Team Work
• Customer Satisfaction	• Process Control and Continuous Improvement
• Employee Satisfaction	• Attention to Small Detail
Behavior	Skill Set
• Humble, Honest, and Trust	• Job-Related Skills
• Self-Discipline and Motivation	• Improvement Tools and Application
• Do What You Say and Deliver Results	• Planning and Time Management
• Overcome Difficulties and Resolve Problem	• Learning Ability
• Be Responsible and be Bound to Duty	• Communication Skills
• Positive and Repsonsive	
United, Dutiful, and Striving – Happy Working	

Figure 5: Vision Statement for Asian Joint Venture

In addition to a growing customer base, China also had considerable opportunities for developing low-cost supply chains and operations. Adding more production work in China for export to all geographic regions was a top-level Alpha Division strategy.

Alpha Division India: The mission for Alpha Division India has been summarized by the author as follows:

> *Through continuous innovation of the quality and reliability of our products and services, we enhance the level of customer satisfaction and contribute towards environment protection.*

India was very similar to China in terms of market growth potential and production opportunity.

Alpha Division Europe: Alpha Division Europe was a more mature market with the majority of growth expected to come from systems solutions. The primary concerns were maintaining its current market share while reducing costs. The author's summary of Alpha Division Europe's Vision and Values is included in Figure 6.

Vision:
Provide industrial mixing and dosing products and services
Provide the highest quality at the lowest cost
Show consistent customer consideration
Values:
Respect each person and treat everyone with equity. Communicate without prejudice.
Satisfy our customers beyond their expectations and reach for excellence
Commit ourselves daily to respect our shareholder's objectives
Respect our commitments. Display honesty and integrity
Respect the environment and ensure safety in the workplace
Act as if it were our own business and prioritize accordingly
Remain open to new ideas and welcome change
Constantly try to improve our processes and products

Figure 6: Alpha Division Europe Vision and Values Statement

Alpha Division Americas: The United States was another mature market where growth would be limited for Alpha Division. Furthermore, there were limited opportunities to pursue system integration work given the use of independent distributors to store and sell the final product. The primary goal was to maintain market share and lower product costs.

Alpha Division Americas did not have a defined future vision statement but did have aggressive plans for growth in adjacent markets to the fairly mature markets it served. The future goals also included adding additional personnel in the sales and customer service areas to ensure existing Alpha Division's customers were served flawlessly and new markets would be effectively developed. To help the company keep its current market share and continue to satisfy its customer, it followed a list of employee expectations which is included as **Figure** 7.

• Relentless focus on the customer
• Work on your game everyday
o What did you do better today than yesterday?
• Be engaged
o Open and honest communications
• Treat each other as a professionals in our respective roles
o Competition is outside these walls
• Drive a Safety First culture
• Be committed to strengthening the business
o Lead time earns orders
• Be a good corporate citizen/support the community
• Act with a sense of urgency

Figure 7: Alpha Division Employee Values

3.3.5.4 Beta Company

The stated Mission and Beliefs Statement for Beta Company is included below:

"Our business is to satisfy our customers by providing timely and effective solutions to their current and future need through our expertise in high pressure technology, systems integration and product distribution. Our focus will be on global markets for demanding, technologically advances, and/or environmentally sensitive applications.

Our vision is to be the recognized leader in our business. We will achieve that recognition by furnishing high-quality fluid system products, and services that deliver satisfaction and value to our customers.

We will conduct ourselves in an ethical and professional manner so that we will be the preferred supplier when needs arise, or problems are encountered.

With this approach we will grow, earn the respect of and profitably balance the interest of our customers, employees, shareholders, suppliers, and the community."

3.3.5.5 Combined Enterprise Future Vision

For this particular acquisition, the future visions for all of the different portions of the combined enterprise were not expected to change; there was no central, guiding vision created for the combined enterprise. Regardless, without a central headquarters function, there would be no group tasked with ensuring the successful progress toward a central end state. It is simple enough to state that for the acquisition, Alpha Division envisioned a smooth and profitable integration of Beta Company across all Alpha Division geographic regions. Additionally, the combined vision should attempt to fulfill the individual visions for each geographically defined business unit.

3.3.6 Creation of Multiple Potential Future State EAs

3.3.6.1 Overview

Once the current state is well defined and a clear understanding of the future vision of the organization is understood, different architectures can be developed to enable that future vision. The current state is needed to understand the transition issues between the current and future state. The vision is required to make sure the future state enables the correct organizational goals.

There are many different paths an enterprise can take to reach its future vision. At this stage in the EA process, it is important to avoid trimming ideas too quickly or risk

missing potentially superior, system level solutions. Developing these different paths, called potential future state EAs, is a creative process that should capture all of the improvement ideas that have been generated throughout the creation of the current state EA and the future vision.

The author's preferred method for converting the multitude of proposed singular solutions into two or three, holistic views is to place all of the ideas into one arena, such as a white board or pieces of paper taped to a wall, and move them into groups based on some defining feature of the enterprise. This can be done several times with different "catalyst" features. Many ideas will apply to most if not all of the future states and should be placed in an area for universally accepted improvements.

3.3.6.2 Acquisition Process Implications

At this point in the process, the proposed combined enterprise needs to be evaluated as a whole instead of as acquiring and target organizations. Ideally, the idea grouping process will include all members from the due diligence team with the acquisition team leader acting as the facilitator. Although it will be tempting to start quantifying synergies at this point, this might eliminate promising concepts before they have a chance to be combined with other concepts that might vastly improve their appeal.

3.3.6.3 Alpha Division – Beta Company Case Study

For the Alpha Division – Beta Company case study, there was no shortage of improvement ideas that were shared by the case study interview participants. These ideas were collected and reviewed by the author. A team based review was not used to avoid taxing the available resources of the host company.

The various ideas quickly coagulated around differing organizational structures; primarily the use of a centralized HQ function for the combined organization or a completely hands off central leadership that would allow the acquisition to exist as a separate brand along with the other geographically delineated business units (US, Europe, and Asia). An EA that reflects what actually happened in the years since the acquisition is also included as a control case. A figure showing these different architectures is included as Table 5.

For this case study, the different future state EAs align themselves on a continuum, with no central HQ function on one end and a defined, more controlling HQ function on the other. There is a wealth of articles and opinions on how an organization should choose to position itself between these two points that is beyond the scope of this thesis. What is most critical for this case study is that the particular pros and cons of each position are well understood as an acquisition is considered. The optimal choice prior to an acquisition may be the wrong choice once all of the new considerations are understood.

	Decentralized HQ	Centralized HQ	Actual State
Global Competitiveness	• Encourage geographic competition to drive innovation • Match supply chain design with site that "owns" a particular product design	• Use political lobbying power of Parent Company to assist Beta • Create "best practice" committees to ensure cross site sharing • Rationalize site selection, manufacturing base across globe • Ensure all brands have information/access to all served markets (uniform product offerings) • Develop a product development skillset at one location which can assist all locations • Encourage holistic design solutions to regional needs	• Provide some alignment personnel, particularly in engineering and procurement • Identify owning sites for product design to minimize regional product differences • Use Parent Company improvement initiatives to drive cross-site intra-function communication • Develop select Global functional leads to encourage commonality across geographic locations
Integration Ease	• Reduce initial impact of acquisition change on acquired companies • Align organizational structure with the Parent Company (divisions are managed autonomously) • Organize division such that Beta Company reports to all three geographic divisions	• Dispel notion of "just another new owner" for Beta Company • Allow Beta Company to share best practices with Alpha Division to increase buy-in • Communicate acquisition progress through organizational change	• Match organizational structure with Parent Company (autonomous business units) • Reduce initial impact of acquisition change on acquired companies
Communication	• Use cross functional Value Stream Teams to encourage intra-site communication	• Standardize organizational structure to promote cross-site communication	• Use cross functional Value Stream Teams to encourage intra-site communication
Customer Focus	• Allow individual sites to optimize their local presence (labor, relationship building, customer knowledge) • Allow manufacturing to better assist sales through regional support of sales campaigns	• Localize sales and customer engineering to support customers	
Common Concepts • Use completed acquisitions as "guides" for new acquisitions • Develop implementation timelines to share finance information with acquisition • Develop integration checklists to monitor and report progress to all stakeholders • Use feedback loops to evaluate implementation progress with the due diligence team • Determine local brand presence based on regional sales recommendations • Allow for recommitment of targets/goals after acquisition to reflect revised information • Develop closer relationships with end consumers regardless of independent distributor involvement • Design communication channels across all organizations to ensure desired linkage/alignment			

Table 5: Proposed Future State EAs

3.3.7 Down-select Process for Future State EAs

3.3.7.1 Overview

An organization can not pursue two differing end states at the same time; one defined future state is needed in order for an organization to work together toward reaching its future vision. Since certain future states will satisfy different stakeholders more than others, it is important to use an impartial down-select process to choose the optimal, system level future state. This helps stakeholders understand the other factors involved in the final decision and increases buy in.

Typically, each proposed future state is judged against the criteria the enterprise deems is most important toward their continued successes. These criteria are often referred to as the "ilities"; such as profitability, flexibility, and survivability among scores of others (although not all of the factors need to end with "ility"). Each "ility" can be given a numeric weight based on how important it is to the future enterprise. Each of the proposed future states can be subjectively scored in each of these "ility" attributes to guide the enterprise architect toward the optimal future state. Along with scoring against the "ilities", other important factors such as implementation costs and risks need to be quantified, where possible. The final decision for the optimal future state may be determined by senior leadership expertise or the ever important "gut" factor. However, it is critical that these leaders have all of the information available before they make this final decision.

3.3.7.2 Acquisition Process Implications

At this point in the acquisition process, EA considerations for the combined enterprise mirror those for EA as applied to existing organizations. However, there is

inherently more uncertainty in the information provided by the target company and this should be accounted for in the down-select process by using more quantification techniques and less "gut" decision making. By using a more numerical analysis, changes in expected implementation difficulty and risk levels can be revised easier to determine if the final chosen future state EA is indeed correct.

Particularly with the acquisition process, risk management is an important consideration for the EA down-select process. There are numerous, well defined risk management processes and tools that can quantify various risks allowing for easy determination of relative risk levels. Further, formal risk management allows for the definition and tracking of mitigation plans to either reduce risk consequence or likelihood.

3.3.7.3 Alpha Division – Beta Company Case Study

Since the proposed future state architectures were not created as a team due to resource constraints, the final selection process was also not completed as a team. While not an ideal situation, it does provide insight into the applicability of EA to the acquisition process.

The author's subjective rating of the what factors were most important to the combined enterprise, the factor weighting, and the scores for each of the proposed future state enterprises is included as Table 6. Both the factor weighting and the individual scoring of each future state EA is on a one to 10 scale with 10 being the highest score. The total score was determined by multiplying each score by the appropriate weighting factor and summing the total. As shown, the Centralized HQ architecture is the most appropriate choice for the future enterprise

Factor	Weighting	Decentralized HQ	Centralized HQ	Actual State
Revenue Growth	8	5	6	5
Cost Reduction	5	3	7	4
Customer Satisfaction	9	7	6	7
Product Quality	7	3	7	4
Reduced Lead Time	4	7	3	7
Employee Satisfaction	4	5	4	4
Employee Productivity	6	3	7	3
Company Flexibility	6	7	5	7
Sustainability	4	3	6	3
Shareholder Satisfaction	7	3	7	3
Score		280	359	288
Risk		med	low	med
Implementation Ease		med	med	med

Table 6: Down-select of Proposed Future State Architectures

3.3.8 Final Future State EA

3.3.8.1 Overview

Once the down-select process is completed, the final chosen enterprise should be fully defined using the seven views highlighted in Figure 1. This provides a deeper understanding of the implementation nuances for each EA view and provides a solid framework to guide the implementation team.

3.3.8.2 Acquisition Process Implications

While the acquiring organization is evaluating a target, it should develop the EA framework using what information it has available. This information should both drive synergy identification and dovetail with other synergies identified during the acquisition process. After closing, the document should be shared and reviewed with the target company, both to verify the assumptions made during the analysis and create buy-in for the plan from the target's leadership. This should greatly simplify the evaluation of any

changes to the original plan, since all of the relative EA views associated with the acquisition will be fully defined.

It is important to realize that the EA process necessitates the complete evaluation of the portion of the acquiring company included in the enterprise boundary. Acquiring organizations are not accustomed to scrutiny when making an acquisition. Identifying system-level synergies requires that the acquiring organization be considered for change. Where the acquiring organization's growth strategy relies on acquisition, the EA will naturally reflect the importance of full integration of current and future acquisitions.

3.3.8.3 Alpha Division – Beta Company Case Study

The acquisition of Beta Company by Alpha Division was, by all accounts, a well-thought-through and successful acquisition and integration. The following sections define the author's chosen future state architectural views of the combined organization. While many of the features of this future state EA are currently in place within Beta Company and Alpha Division, there are other features that are new as a result of the analysis. The following description of each Future State EA view primarily captures only these changes without repeating unchanged information detailed in the current state EA.

3.3.8.4 Policy/External View

Acquisition Implications: An acquisition creates the opportunity for the larger organization to exert more influence on policy and external factors. Stronger political influence in one organization is transferable to the combined organization. Consideration for how the organization can combine political influence without degrading any of its value is of prime importance in any acquisition.

Beta Company / Alpha Division: In order to benefit from the stronger political power of Alpha Division's Parent Company (which were not included within the boundary definition but are stakeholders in the combined enterprise), Beta Company would need to be fully integrated into Alpha Division. Once integration was complete, Beta Company's political needs would be considered along with all of the other business units within the Parent Company. For instance, if Beta Company would benefit from governmental policy changes in the markets it serves; it could leverage the Parent Company's lobbying power to influence key decision makers. This increased political power was new to Beta Company as a result of the acquisition.

3.3.8.5 Strategy

Acquisition Implications: An acquisition normally supports an organization's strategy for vertical supply chain power, market share growth, synergies within the product mix, or scale economies. A completed acquisition should therefore enhance an acquiring firm's strategy, in that it helps move the organization toward its strategic goals. For the target firm, the firm-level strategy may change drastically depending on the acquiring firm's needs. The combined organization may be structured such that each maintains separate strategies: for instance, if the significant portions of the acquired organization are planned for divestiture or the inherent risk of the acquired organization makes separation more appropriate for an extended period of time.

Defining a new strategy for the combined organization creates a valuable opportunity to align the organization with the integration plan. The new strategy should be displayed prominently within both organizations. This allows the entirety of the acquiring organization to understand how the acquisition changes its organization (if it does). It

highlights for the target organization's personnel its new role in the larger organization and provides an opportunity for the acquiring company to show consistency in message and action.

Beta Company / Alpha Division: There was opportunity within Alpha Division and Beta Company to standardize the strategy for the entire Alpha Division company (including all global brands) in order to align individual business divisions' actions and provide guidance on how each piece fit into the overall picture. This would help the new acquisitions understand its role in the overall global organization. The new organization would compete based on perceived quality with channels to market designed according to regional management's discretion. Further, with a centralized strategy for the global organizations, regional management would better understand how its efforts fit with the performance of the other regional divisions.

3.3.8.6 Process

Acquisition Implications: A new acquisition can open opportunities to vary the process an acquiring organization follows by expanding the vertical supply chain presence of the combined organization. It can also create opportunities for best practice sharing between the acquiring and target companies. Implementing best practices from the target company can help the target's employees feel that they are contributing to the design of the new organization and eliminate the feeling they have been "taken over".

Beta Company / Alpha Division: There were no inherent best practices highlighted as opportunities for sharing across the two organizations. As a matter of business practice, it would have been beneficial to address the extensive use of distributors in the US market. Independent distributors limit the amount of customer information they share with the

manufacturing company. They also required some amount of margin in order to sell Alpha Division and Beta Company products, which decreased the value that Beta Company and Alpha Division could capture. Finally, the distributors provided the value-added service of system design, which was potentially lucrative.

It might not have been realistic to eliminate or curtail the use of distributors. Since the distributors own the customers, if Alpha Division and Beta Company had tried to sell direct, the distributors could have switched to other OEM suppliers. Equity arrangements or more distributor partnering might have helped eliminate some of the negative aspects of the current distributor arrangements.

3.3.8.7 Organization

Acquisition Implications: The most visible aspect of the organizational lens is the combined organizational chart. While the current view fully examines the strategic, political, and cultural lenses, the future vision can only really affect the strategic lens. All aspects of the political and cultural lenses are vital in the creation of a transition plan, but the key organizational change after an acquisition is in the strategic, structural aspects of the combined organization. A proposed organizational chart should be prepared prior to close with a period for comments and adjustments as required. This new organizational structure can help the target organization's personnel understand where they fit into the larger company and provide information on the acquiring organization's structure. The organization view should also highlight any facility consolidations that might be enabled by the acquisition. Consolidation should be considered as a piece of the overall architecture and should take into account all of the different EA views.

Beta Company / Alpha Division: With Beta Company operating with a strong central HQ function in California and Alpha Division operating four separate geographically located businesses, there would be significant structural friction in the new organization. Alpha Division had pursued a geographically delineated organizational strategy in order to better address local market needs. This had been a central tenant of its organizational structure for many years. Unfortunately, this type of organizational strategy makes it difficult for target companies to alter its structures to create adequate reporting relationships and can create confusion.

Given the continued expected pace of acquisition activity at Alpha Division to meet their growth targets, a centralized HQ function that governs manufacturing, finance, support engineering, and procurement would provide for easier integration and significantly reduced integration complications. Sales and product and customer engineering could maintain its geographic separation to better serve its individual customers. This simplified organizational structure would allow new acquisition to easily understand how they would be integrated into Alpha Division, thereby easing integration efficiency.

3.3.8.8 Knowledge Management

Acquisition Implications: Knowledge management has historically not been considered as vital a part of the synergy identification as other EA views. However, as corporations move up the value stream and outsource lower-skilled operations, knowledge management is becoming a more important factor to consider. Combined with the relatively short half-life of most of today's information, mechanisms to identify and efficiently transfer information between the acquiring and target organizations is a vital part of an integration

plan. Determining how such information should be shared in the future is a vital first step in planning for the transfer of knowledge directly after an acquisition has been made.

Beta Company / Alpha Division: Considering the minimal overlap in products offered and customers served, there were few areas for knowledge sharing in the combined organization. Similarly, neither firm had an overwhelming advantage in any particular business process that was vital to reinforcing a weakness in the other organization.

In the transition period, there would be an opportunity for one of the recently completely acquisitions within Alpha Division to serve as a mentor to Beta Company for the integration process itself. A firm who understands what portions of the integration is dictated by the Parent Company and which are open for debate would be invaluable at reducing the ambiguity of the entire process to Beta Company. The mentoring firm could also provide information on timing of the Parent Company's corporate charges and information on exactly who within the Parent Company to contact with specific questions.

3.3.8.9 Information Technology

Acquisition Implications: Information Technology infrastructure can vary greatly between different companies and can be a barrier to seamless communication during an acquisition. Understanding these differences and planning for migration to platforms that can communicate is an increasingly important step in the transition process. Ideally, the best pieces from each company would be combined to create a stronger overall IT infrastructure.

Beta Company / Alpha Division: The IT infrastructures between Beta Company and Alpha Division were quite similar. Also, as part of the Parent Company, Alpha Division had certain corporate standards that dictated what Alpha Division and its acquisition could

implement from an IT view. Therefore, the IT view mirrored the Parent Company's corporate standard.

3.3.8.10 Products and Services

Acquisition Implications: Understanding how the product and services offerings will mesh together for the combined enterprise is a major source of synergy identification. Acquisitions can create opportunities for bundling, up-selling, capitalizing on complementary products and services, or filling a hole in a product family. Decisions on product lines that may not fit the combined enterprise, as well as products currently in the development stage that need to be expedited to market, should be identified as part of the future state products and services view.

Beta Company / Alpha Division: Beta Company and Alpha Division had very little, if any, product overlap. Although they served some of the same industries, they supported very different operations within those industries. In this case, the products and services view was simply an amalgamation of the two separate current product and services views.

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4 Project Results

4.1 Beta Company / Alpha Division Case Study Results

Applying EA to the case study highlighted multiple opportunities to help the combined enterprise enable its future vision. The most important opportunities have been categorized into two distinct elements. Each is described in the following sections.

4.1.1 Organizational Structure Tension

Alpha Division's decision to pursue a regional business strategy with minimal corporate headquarter alignment creates a challenge for new acquisitions more accustomed to a stronger headquarters with international sales presence. Other Alpha Division acquisitions have faced similar challenges. Given that growth through acquisition is a major component of Alpha Division's business strategy, the smooth integration of acquisitions is of paramount importance.

Therefore, the future state indicated Alpha Division should adopt a stronger headquarters function that would have primary responsibility for managing procurement, manufacturing, finance, strategic planning, and most portions of engineering. Regional businesses would be primarily responsible for sales and customer relationship management (customer engineering, market development, and new product specification). Local manufacturing facilities could still be used to assist with regional sales campaigns (e.g. expediting an order to satisfy a local customer). New acquisitions could be restructured in a similar manner; specific functions within each acquisition would report directly to the global leader, while sales would report regionally. This arrangement would greatly

simplify the structure for all of Alpha Division's brands and allow for the identification of more system-level synergies. Given that Beta Company was essentially its own international company at the time of acquisition, synergy identification opportunities with other brands was very unlikely.

A revised stakeholder map that reflects this revised organizational structure is included as Figure 8.

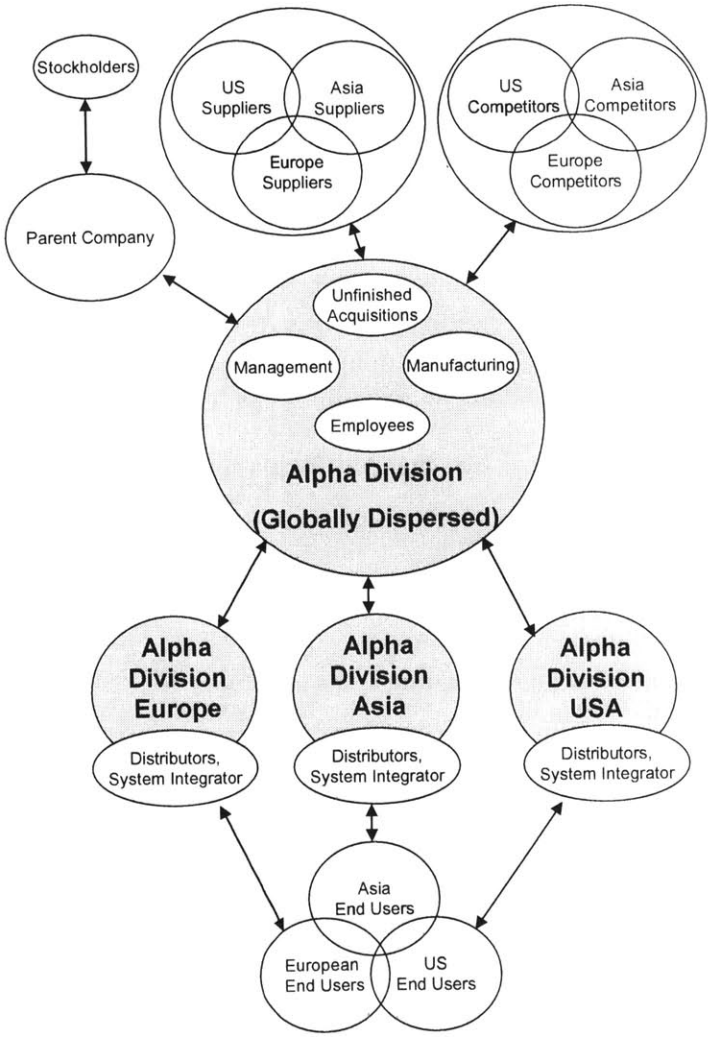

Figure 8: Proposed Future State Stakeholder Map

4.1.2 Sales Channel Opportunities

The extensive use of independent distributors in the US market for both Alpha Division and Beta Company was listed as one of the primary reasons for the acquisition. While the similarities in the channel to market wouldn't make it harder to manage the two combined organizations, there was little-to-no overlap between the two distributor networks, which would indicate it would take less effort to manage both together. The use of independent distributors also created a number of challenges for Alpha Division:

- The distributors essentially owned the customer and could choose different OEMs as they saw fit
- Given this vertical market power, distributors could command a larger portion of the overall value created by the entire supply chain
- Distributors were not encouraged to provide customer information back to Alpha Division, which limited the ability to understand the customers' changing needs and adjust the product/service offerings accordingly
- The distributors maintained the ability to perform the lucrative system-design work, a potential source of revenue growth in the mature European and US markets

The future state EA identified these limitations as an opportunity for improvement. Making changes in these areas would not be straightforward, however. The distributors had a lot of power in the relationship and would see any movement to reduce their power as a threat. It is recommended that Alpha Division further evaluate mechanisms that might bridge some of these gaps, such as modifying incentives to increase sharing of customer information. Unfortunately, the existing relationships are too delicate for this thesis to recommend specific actions.

4.2 Hypothesis disproved?

The original internship hypothesis had four conditions that needed to be validated in order to be proved valid. They were:

1. Verify all elements analyzed in the current acquisition process are covered by the EA framework
2. Explore any modification to the framework that may be required as applied to acquisitions
3. Provide a case study of the application of EA to a recently completed acquisition
4. Demonstrate an added benefit for applying the EA framework versus current methods

The first three conditions were all met. The first condition is covered in more detail in section 3.1. Modifications to and clarifications of the EA framework required to apply the concepts to acquisitions are covered in section 3.3 and its subsections. The case study is also included in its entirety in section 3.3 and its subsections.

The fourth condition was, in the author's opinion, only partially met. At issue is the concept of "benefit." It is clear that EA showed qualitative benefit both for the case study and the acquisition process. However, particularly for the acquisition process, any decision to pay large sums of money for the rights to another company requires an offsetting expectation of numerically quantifiable benefits in either reduced costs or increased revenue. The case study did not identify additional "numerically quantifiable" synergies. The primary reason for this was the excellent job Alpha Division managers did at evaluating the acquisition; they simply uncovered the majority of the quantifiable potential synergies that the EA might have pointed to. A secondary reason was that using a past acquisition creates a certain amount of presupposition for the future state EA that is

difficult to overcome through personal interviews. Information shared was inherently slanted toward the chosen solution.

4.2.1 Acquisition Process Improvements

Even with this lack of quantifiable benefit, there were other benefits associated with applying EA to the acquisition process.

4.2.1.1 Process Consistency

The first is the improvement in the consistency of the analysis from person to person that a more standardized process makes available. Currently, the quality of the acquisition assessment is very dependant on the skill of the person managing the project. There are extensive amounts of oversight and reviews to make sure that all of the aspects of the acquisition are fully explored.

4.2.1.2 Collaboration Opportunities

The second, and arguably more valuable, benefit is the ability to identify more system-level benefits than is available using the current processes. Currently, the due diligence process is very "stove-piped," with distinct functional expertise evaluating the capabilities of the target organization. A team leader is tasked with bringing this information together to evaluate the target organization as a whole. Identification of system benefits is highly reliant on this leader's ability to spot potential synergies across these functional groups. In contrast, EA creates the opportunity to increase the communication and collaboration across the due diligence team. In addition, it allows the target organization to review the analysis after deal closing and highlight unforeseen challenges and opportunities. This process improvement is shown below as Figure 9.

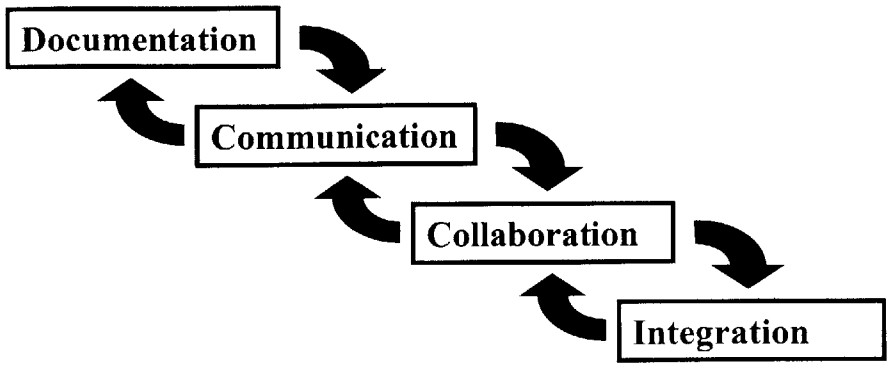

Figure 9: Collaboration Benefits of EA

Figure 9 illustrates the expected benefit of inter-team communication. Increased documentation of all aspects of the acquisition allows the team to communicate about areas of the acquisition they may not ordinarily be exposed to. This increased communication allows the group to collaborate more efficiently, since all players have equal amounts of information. It also allows the target organization to review the information that led to synergy identification and correct any errant information that might change the synergy calculations.

4.2.1.3 Best Practice Sharing with Future Acquisitions

Once an acquisition is complete, there is typically a lack of documented evidence for the thought process that led to the decision. There may be a handful of excel sheets that document the cash flows or net present value of the deal and a few PowerPoint presentations that highlight the factors that led to the acquisition decision. Most of the other considerations are not documented and are unavailable once employees familiar with the acquisition move into other organizations or leave the company. EA as a framework would provide an excellent method for documenting all aspects of the decision for future review and knowledge transfer. It would also allow the acquiring organization a better opportunity to review the basis for its decision processes during periodic reviews.

4.2.2 Recommendation for Further Evaluation

Given the expected "softer" benefits of applying EA to the acquisition process, it is recommended that EA be applied to a "live" acquisition. The primary goals of such an implementation would be as follows:

- Verify the timing of data collection as presented in section 2.4.1
- Gather team feedback on the perceived increased amount and value of communication made possible by the EA framework
- Compare EA results with those that would have been found using current methods

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5 Thesis Implications for Major Stakeholders

5.1 Broader Impacts of Thesis

The project results for this internship are presented in Section 4 and give recommendations for the analyzed case study and the sponsoring Business Development group. A larger question remains as to the value of the thesis to the larger stakeholder groups as a whole. This section elaborates on the benefits that can be derived from this body of work to Business Development artisans, Enterprise Architects, and System Engineers.

5.1.1 Business Development Organizations

The task of evaluating acquisitions is very much an art rather than a carefully designed and scrupulously followed process. The quality of the acquisition evaluation is very dependant on the skill of the team members and the quality and amount of review sessions that are performed before an offer is tendered. While the cross-functional team that is built during due diligence is quite functional and team members' goals are relatively aligned toward a successful and profitable acquisition, the techniques and mechanisms required for the team to share information are immature.

The successful application of EA to the acquisition process is an important first step toward resolving some of these challenges. Providing a process framework that encompasses all of the variables currently evaluated and placing them in a coherent order is required before the process can be adopted and refined. EA provides such a framework. Standardizing a process that captures the subtle aspects of a potential acquisition yet is easy and straightforward enough that a new employee to the Business Development

organization can follow it will vastly improve the effectiveness of new acquisition analyst. EA provides such a process. Developing tools and methodologies that can help stove piped functional experts share their information with the rest of the team and providing a common understanding of how these functional groups should interact at the functional boundaries is critical in developing holistic, system level synergies. EA provides such a forum. Finally, presenting some of the powerful systems engineering tools to an organization whose success and failure depends on the integration of complex components opens the possibility that more of the successful tools from the systems engineering discipline can be brought to bear on acquisition and integration activities. EA provides such a bridge.

The author hopes that this body of work can spark some of the improvement suggested above. It is unfortunate EA did not provide a numerically quantifiable benefit to a group that lives and dies by the "numbers" of an acquisition for this particular case study. There will need to be some amount of faith required for a Business Development organization to invest the time and energy in confirming EAs benefits to their own personal organization.

5.1.2 Enterprise Architects

The growing field of EA is further bolstered by this thesis in two key ways. First, this thesis provides a case study of a successful application of EA in an area outside of the current body of knowledge. This should broaden the appeal of the framework and create a larger body of business leaders who understand and embrace the concept of EA. Second, this thesis highlights new potential modification to the EA framework required in order to be applied to acquisitions. The requirement to run certain analyses twice, both for the acquiring and target organizations, is new to the study of EA and provides an interesting insight into other evaluations that might require similar modifications. For instance, if EA

were used to analyze a newly formed joint venture or the addition of a new partner to an existing enterprise, similar modifications might be required.

5.1.3 Systems Engineering

System Engineering is an area of great wealth and process discipline in designing and analyzing complex systems of disparate entities. In addition to EA, there is a multitude of other processes and tools that could be applied to the acquisition process such as:

- Risk Management: The acquisition process is equally concerned with risks as it is with opportunity yet it employs no formal risk management processes. Robust methodologies and tools exist in Systems Engineering to quantify and mitigate risk.
- Requirements Management: Once a deal is closed, there are a number of requirements that are created for the acquiring and target organizations. These requirements are mentioned in Power Point slides but never tracked and managed in a holistic sense. Further, inability to meet and conversely, ability to vastly exceed, these requirements is not analyzed on its effects on other requirements. Systems Engineering has well developed Requirements Management processes and tools that might be applicable.
- Integrated Scheduling: Acquisition integration requires a set of inter-related tasks to be completed on some set timeline. Any changes to this timeline can have cascading effects on future tasks. Acquisition integration does not use a robust integrated scheduling process where impacts can be assessed and evaluated. Systems Engineering has designed processes and tools that allow for this type of deeper analysis.

System engineers should draw from this thesis a new market for their skills and services. Acquisitions are areas of huge risk and reward where deeper understanding of the holistic

effects of decisions can reap massive rewards. This thesis should provide systems engineers with a glimpse into the acquisition world and provide opportunities to share well defined analysis techniques. Further, systems engineers might find the acquisition process a fruitful bridge into the other adjacent governing business processes that are similarly ripe for process development.

5.2 Personal Insights

When I began this internship, I had very little doubt that EA would be applicable and provide benefit to the acquisition process. Process discipline, while robust in areas adjacent to operations, is not yet engrained at the higher levels of the organizational structure. I believed EA would provide the catalyst to develop these processes in the Business Development organization. I also believed that process discipline would create the same benefits in the Business Development organization as experienced in operations. I didn't fully expect to find quantifiable benefit in the case study, but I was fairly confident the benefits of EA would be self evident.

During the internship, my beliefs were further reinforced as I began to understand the acquisition process and its early stage in process development. The existing research on the historical success of acquisitions further reinforced my expectation that EA would add value. Although EA did not find quantifiable benefit for the case study, it did point to a number of process efficiency improvements that would have been valuable had EA been used at the time of acquisition.

Section 4.2 covers the results of the internship and thesis in detail. In addition, my personal key take-aways from the experience are:

- EA necessitates the complete analysis of both the target and acquiring organizations. Typically, the acquiring organization is not looking to make

major changes within its structure. If only one half of the organization is expected to make changes, only half of the potential synergies will be identified.

- From the literature research, it is interesting to consider how much money and risk is involved in the acquisition process compared with the amount of systematic, analytical rigor most companies invest. As a systems engineer, it appears more analysis is done on small detail parts than what gets devoted to multi-million dollar, make or break the company type deals.
- EA is a powerful tool that can be used to analyze an incredible array of different enterprises and is well worth the time and effort devoted to it.

In summary, this internship and thesis was an incredibly valuable experience that showed the merit of applying EA to the acquisition process. I firmly believe that the application of the EA framework to an active acquisition would yield tremendous results and would quickly institutionalize itself as "the way" after employees gain familiarity with the tools and methods. I also suspect that other, adjacent business organizations would recognize the power of strong, documented processes and look to apply other system engineering solutions within their own complex organizations. Despite the lack of demonstrated quantifiable improvement in the case study, I sincerely hope that Business Development organizations will recognize the inherent benefits of EA and implement EA in their organizations. They won't be disappointed.

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